November 13, 2014

Ms. Barbara Barhydt
City of Portland
389 Congress Street
Portland, ME 04101

Subject: **Level III Final Site Plan and Subdivision Development Review Application**
"midtown" Project

Dear Barbara:

On behalf of The Federated Companies, we are pleased to provide the accompanying package of submission materials related to the development of a mixed-use commercial complex on Somerset Street. This submission package is intended to meet the City's Final Submission Requirements as outlined in the Level III Application procedures. The proposed project is comprised of a parking garage for 828 vehicles, 445 residential apartments, and 91,500 SF of retail space on four lots totaling 3.50-acres of property.

Accompanying this cover letter are the following materials:

Exhibit #	Description
1	Level III Final Site Plan & Subdivision Application Including Neighborhood Meeting Notice/Minutes/Public Meeting Certification
2	Written Description of Project
3	Evidence of Title Right or Interest
4	Technical and Financial Capacity
5	Utilities Narrative
6	Fire Department Review and Life Safety Plan Information
7	State and Federal Permit Requirements
8	Construction Management Plan
9	Traffic Report – To be Provided Under Separate Cover
10	Transportation Demand Management (TDM) Plan
11	AutoTURN Template for Driveways
12	Transit Stop for Metro (Documentation of Plan Coordination)
13	Stormwater Management Report & O&M Manual
14	Erosion & Sedimentation Data Report
15	Haley & Aldrich Report Geotechnical Report
16	Environmental and Historical Considerations
17	Compliance with Applicable Zoning & B-& Land Use Requirements
18	Proposed Easement, Covenants, Public or Private Right of Way or Other Burdens of the Site
19	Review of Section 14-526 Design Standard
20	Compliance with Comprehensive Plan
21	Areas to be Disturbed by Project Construction
22	Samples of Exterior Materials
23	Written Waivers from Site Plan or Technical Standards
24	LEED Information

You will find in the accompanying materials, information including the Final Site Layout Plans, Architectural Plans, and various site plans that provide greater detail for the site development activities. We look forward to the City's Staff review over the upcoming weeks as we seek to reach a Final Planning Board action in January 2015, if possible.

On behalf of the Design Team, we look forward to your continued assistance on the project. Please find one (1) hard copy of the application materials including one set each of 11 x 17 and full size plans, along with a CD containing PDF files for all submitted materials.

If you have any questions regarding these materials, please contact our office.

Sincerely,

FAY, SPOFFORD & THORNDIKE

Stephen R. Bushey, P.E.
Senior Principal Engineer

SRB/cmd

Enclosure

c: Nick Wexler, The Federated Companies (e-mail copy)
David Hancock, CBT Architects (e-mail copy)
Bob Metcalf, Mitchell & Associates (e-mail copy)

R:\3062B - midtown Amended - Portland, ME\Admin\Permitting\Local\Final Site Plan & Subdivision\3062B 2014.11.14 Knowland (prelim SP application).docx

Portland, Maine Yes. Life's good here.

Jeff Levine, AICP, Director
Planning & Urban Development Department

Electronic Signature and Fee Payment Confirmation

Notice: Your electronic signature is considered a legal signature per state law.

By digitally signing the attached document(s), you are signifying your understanding this is a legal document and your electronic signature is considered a ***legal signature*** per Maine state law. You are also signifying your intent on paying your fees by the opportunities below.

I, the undersigned, intend and acknowledge that no Site Plan or Historic Preservation Applications can be reviewed until payment of appropriate application fees are ***paid in full*** to the Inspections Office, City of Portland Maine by method noted below:

☐ Within 24-48 hours, once my complete application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☐ Within 24-48 hours, once my application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☒ I intend to deliver a payment method through the U.S. Postal Service mail once my application paperwork has been electronically delivered.

Applicant Signature:
Date: November 14, 2014

Stephen R. Bushey, P.E. - Sr. Principal Engineer
I have provided digital copies and sent them on:
Date: November 14, 2014

NOTE: All electronic paperwork must be delivered to buildinginspections@portlandmaine.gov or by physical means i.e. a thumb drive or CD to the Inspections Office, City Hall, 3rd Floor, Room 315.

Level III – Preliminary and Final Site Plans
Development Review Application
Portland, Maine

Planning and Urban Development Department
Planning Division

Portland's Planning and Urban Development Department coordinates the development review process for site plan, subdivision and other applications under the City's Land Use Code. Attached is the application form for a Level III: Preliminary or Final Site Plan. Please note that Portland has delegated review from the State of Maine for reviews under the Site Location of Development Act, Chapter 500 Stormwater Permits, and Traffic Movement Permits.

Level III: Site Plan Development includes:

- New structures with a total floor area of 10,000 sq. ft. or more except in Industrial Zones.
- New structures with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- New temporary or permanent parking area(s) or paving of existing unpaved parking areas for more than 75 vehicles.
- Building addition(s) with a total floor area of 10,000 sq. ft. or more (cumulatively within a 3 year period) except in Industrial Zones.
- Building addition(s) with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- A change in the use of a total floor area of 20,000 sq. ft. or more in any existing building (cumulatively within a 3 year period).
- Multiple family development (3 or more dwelling units) or the addition of any additional dwelling unit if subject to subdivision review.
- Any new major or minor auto business in the B-2 or B-5 Zone, or the construction of any new major or minor auto business greater than 10,000 sq. ft. of building area in any other permitted zone.
- Correctional prerelease facilities.
- Park improvements: New structures greater than 10,000 sq. ft. and/or facilities encompassing 20,000 sq. ft. or more (excludes rehabilitation or replacement of existing facilities); new nighttime outdoor lighting of sports, athletic or recreation facilities not previously illuminated.
- Land disturbance of 3 acres or more (includes stripping, grading, grubbing, filling or excavation).

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14) which is available on our website:

Land Use Code: http://me-portland.civicplus.com/DocumentCenter/Home/View/1080
Design Manual: http://me-portland.civicplus.com/DocumentCenter/View/2355
Technical Manual: http://me-portland.civicplus.com/DocumentCenter/View/2356

Planning Division
Fourth Floor, City Hall
389 Congress Street
(207) 874-8719

Office Hours
Monday thru Friday
8:00 a.m. – 4:30 p.m.

Updated: April 23, 2014

PROJECT NAME: "midtown" Project

PROPOSED DEVELOPMENT ADDRESS:

Somerset Street between Elm and Pearl Street (northwesterly side) and Elm Street between Portland Trail and lot with Trader Joe's - mixed use.

PROJECT DESCRIPTION:

A 3.50 a.c. mixed-use development with a 828 space parking garage and up to 445 residential units and 91,500 s.f. of retail space.

CHART/BLOCK/LOT: 034/D009001; 025/A022001
034/D010001; 034/D003; 025/A022;
025/B002; 025/B003; 025/B004;
025/B005

PRELIMINARY PLAN 10/17/2014 (date)
FINAL PLAN 11/14/2014 (date)

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: Jonathan Cox Business Name, if applicable: The Federated Companies Address: P.O. Box 370008 City/State : Miami, FL Zip Code: 33137-4110	**Applicant Contact Information** Work # (305) 974-1454 Home# Cell # (978) 375-1414 Fax# e-mail: j_cox@federatedcompanies.com
Owner – (if different from Applicant) Name: City of Portland, Maine Address: 389 Congress Street City/State : Portland, ME Zip Code: 04101	**Owner Contact Information** Work # Home# Cell # Fax# e-mail:
Agent/ Representative Name: Stephen R. Bushey, P.E. Address: 778 Main Street, Suite 8 City/State : South Portland, ME Zip Code: 04106	**Agent/Representative Contact information** Work # 207-775-1121 Cell # 207-756-9359 207-879-0896 e-mail: sbushey@fstinc.com
Billing Information Name: SAME AS APPLICANT Address: City/State : Zip Code:	**Billing Information** Work # Cell # Fax# e-mail:

Engineer Name: Bo E. Kennedy, P.E. - Engineer Stephen R. Bushey, P.E. - Sr. Principal Engineer Address: 778 Main Street, Suite 8 City/State : South Portland, ME Zip Code: 04106	**Engineer Contact Information** Work # 207-775-1121 Cell # 207-318-8364 Fax# 207-879-0896 e-mail: bkennedy@fstinc.com; sbushey@fstinc.com
Surveyor Name: Owen Haskell, Inc. - Ellen Brewer Address: 390 U.S. Route 1 City/State : Falmouth, ME Zip Code: 04105	**Surveyor Contact Information** Work # 207-774-0424 Cell # Fax# e-mail: ebrewer@owenhaskell.com
Architect Name: David Hancock AIA LEED CBT Architects Address: 110 Canal Street City/State : Boston, MA Zip Code: 02114	**Architect Contact Information** Work # 617-646-5353 Cell # Fax# e-mail: hancock@cbtarchitects.com
Attorney Name: TO BE DETERMINED Address: City/State : Zip Code:	**Attorney Contact Information** Work # Cell # Fax# e-mail:

APPLICATION FEES:

Check all reviews that apply. (Payment may be made by Credit Card, Cash or Check payable to the City of Portland.)

Level III Development (check applicable reviews)

___ Less than 50,000 sq. ft. ($500.00)
___ 50,000 - 100,000 sq. ft. ($1,000)
x 100,000 – 200,000 sq. ft. ($2,000)
___ 200,000 – 300,000 sq. ft. ($3,000)
___ over $300,00 sq. ft. ($5,000)
___ Parking lots over 11 spaces ($1,000)
___ After-the-fact Review ($1,000.00 plus applicable application fee)

Plan Amendments (check applicable reviews)

___ Planning Staff Review ($250)
___ Planning Board Review ($500)

The City invoices separately for the following:

- Notices ($.75 each)
- Legal Ad (% of total Ad)
- Planning Review ($40.00 hour)
- Legal Review ($75.00 hour)

Third party review fees are assessed separately. Any outside reviews or analysis requested from the Applicant as part of the development review, are the responsibility of the Applicant and are separate from any application or invoice fees.

Other Reviews (check applicable reviews)

x Traffic Movement ($1,000)
___ Stormwater Quality ($250)
x Subdivisions ($500 + $25/lot)
\# of Lots 445 x $25/lot = $11,125
___ Site Location ($3,000, except for residential projects which shall be $200/lot)
\# of Lots ___ x $200/lot = ______
___ Other ______________________
___ Change of Use
___ Flood Plain
___ Shoreland
___ Design Review
___ Housing Replacement
___ Historic Preservation

*As indicated in previous conversations with City Staff and the Applicant, the Fees will be determined by City Staff corresponded directly to the applicant.

APPLICATION SUBMISSION:

1. All site plans and written application materials must be submitted electronically on a CD or thumb drive with each plan submitted as separate files, with individual file which can be found on the **Electronic Plan and Document Submittal** page of the City's website at http://me-portland.civicplus.com/764/Electronic-Plan-and-Document-Submittal

2. In addition, one (1) paper set of the plans (full size), one (1) paper set of plans (11 x 17), paper copy of written materials, and the application fee must be submitted to the Building Inspections Office to start the review process.

The application must be complete, including but not limited to the contact information, project data, application checklists, wastewater capacity, plan for fire department review, and applicant signature. The submissions shall include one (1) paper packet with folded plans containing the following materials:

1. **One (1) full size site plans** that must be **folded.**
2. One (1) copy of all written materials or as follows, unless otherwise noted:
   a. Application form that is completed and signed.
   b. Cover letter stating the nature of the project.
   c. All Written Submittals (Sec. 14-525 2. (c), including evidence of right, title and interest.
3. A stamped standard boundary survey prepared by a registered land surveyor at a scale not less than one inch to 50 feet.
4. Plans and maps based upon the boundary survey and containing the information found in the attached sample plan checklist.
5. One (1) set of plans reduced to 11 x 17.

Please refer to the application checklist (attached) for a detailed list of submission requirements.

APPLICANT SIGNATURE:

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Level II Site Plan review. It is not a permit to begin construction. An approved site plan, a Performance Guarantee, Inspection Fee, Building Permit, and associated fees will be required prior to construction. Other Federal, State or local permits may be required prior to construction, which are the responsibility of the applicant to obtain.

Signature of Applicant:	**Date:** November 14, 2014

PROJECT DATA

The following information is required where applicable, in order to complete the application.

Total Area of Site	152,296 sq. ft.	
Proposed Total Disturbed Area of the Site	152,296 sq. ft.	
If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with DEP and a Stormwater Management Permit, Chapter 500, with the City of Portland.		
Impervious Surface Area		
Impervious Area (Total Existing)	Disturbed Site - >95% sq. ft.	
Impervious Area (Total Proposed)	>150,000 sq. ft.	
Building Ground Floor Area and Total Floor Area		
Building Footprint (Total Existing)	1,127 sq. ft.	
Building Footprint (Total Proposed)	113,900 sq. ft.	
Building Floor Area (Total Existing)	1,127 sq. ft.	
Building Floor Area (Total Proposed)	715,100 sq. ft.	
Zoning		
Existing	B-7	
Proposed, if applicable	B-7	
Land Use		
Existing	Unimproved Former Rail Yard and Metal Recycling	
Proposed	Mixed Use	
Residential, If applicable		
# of Residential Units (Total Existing)	0	
# of Residential Units (Total Proposed)	445	
# of Lots (Total Proposed)	6 (2 of which are retained by the City)	
# of Affordable Housing Units (Total Proposed)	0	
Proposed Bedroom Mix		
# of Efficiency Units (Total Proposed)	120	
# of One-Bedroom Units (Total Proposed)	130	
# of Two-Bedroom Units (Total Proposed)	195	
# of Three-Bedroom Units (Total Proposed)		
Parking Spaces	On Street	Garage
# of Parking Spaces (Total Existing)	65	0
# of Parking Spaces (Total Proposed)	49	828
# of Handicapped Spaces (Total Proposed)	0	17
Bicycle Parking Spaces		
# of Bicycle Spaces (Total Existing)	0	
# of Bicycle Spaces (Total Proposed)	176	
Estimated Cost of Project	$85 Million	

PRELIMINARY PLAN (Optional) - Level III Site Plan

Applicant Checklist	Planner Checklist	# of Copies	**GENERAL WRITTEN SUBMISSIONS CHECKLIST**
X		1	Completed Application form
X		1	Application fees
X		1	Written description of project
X		1	Evidence of right, title and interest
X		1	Evidence of state and/or federal approvals, if applicable
X		1	Written assessment of proposed project's compliance with applicable zoning requirements
X X		1	Summary of existing and/or proposed easement, covenants, public or private rights-of-way, or other burdens on the site
X		1	Written requests for waivers from site plan or technical standards, if applicable.
X		1	Evidence of financial and technical capacity
X		1	Traffic Analysis (may be preliminary, in nature, during the preliminary plan phase)
Applicant Checklist	Planner Checklist	# of Copies	**SITE PLAN SUBMISSIONS CHECKLIST**
X		1	Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
X		1	**Preliminary Site Plan including the following: (information provided may be preliminary in nature during preliminary plan phase)**
X		Proposed grading and contours;	
X		Existing structures with distances from property line;	
X		Proposed site layout and dimensions for all proposed structures (including piers, docks or wharves in Shoreland Zone), paved areas, and pedestrian and vehicle access ways;	
X		Preliminary design of proposed stormwater management system in accordance with Section 5 of the Technical Manual (note that Portland has a separate applicability section);	
X		Preliminary infrastructure improvements;	
X		Preliminary Landscape Plan in accordance with Section 4 of the Technical Manual;	
X		Location of significant natural features (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features) located on the site as defined in Section 14-526 (b) (1);	
X		Proposed buffers and preservation measures for significant natural features, as defined in Section 14-526 (b) (1);	
X		Location , dimensions and ownership of easements, public or private rights of way, both existing and proposed;	
X		Exterior building elevations.	

Updated: April 23, 2014

FINAL PLAN - Level III Site Plan

Applicant Checklist	Planner Checklist	# of Copies	**GENERAL WRITTEN SUBMISSIONS CHECKLIST** **(* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)**
X		1	* Completed Application form
X		1	* Application fees
X		1	* Written description of project
X		1	* Evidence of right, title and interest
X		1	* Evidence of state and/or federal permits
X		1	* Written assessment of proposed project's specific compliance with applicable Zoning requirements
X		1	* Summary of existing and/or proposed easements, covenants, public or private rights-of-way, or other burdens on the site
X		1	* Evidence of financial and technical capacity
X		1	Construction Management Plan
X		1	A traffic study and other applicable transportation plans in accordance with Section 1 of the technical Manual, where applicable.
X		1	Written summary of significant natural features located on the site (Section 14-526 (b) (a))
X		1	Stormwater management plan and stormwater calculations
X		1	Written summary of project's consistency with related city master plans
X		1	Evidence of utility capacity to serve
X		1	Written summary of solid waste generation and proposed management of solid waste
X		1	A code summary referencing NFPA 1 and all Fire Department technical standards
X		1	Where applicable, an assessment of the development's consistency with any applicable design standards contained in Section 14-526 and in City of Portland Design Manual
X		1	Manufacturer’s verification that all proposed HVAC and manufacturing equipment meets applicable state and federal emissions requirements.

Applicant Checklist	Planner Checklist	# of Copies	**SITE PLAN SUBMISSIONS CHECKLIST** **(* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)**
X		1	* Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
X		1	**Final Site Plans including the following:**
X			Existing and proposed structures, as applicable, and distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone);
X			Existing and proposed structures on parcels abutting site;
X			All streets and intersections adjacent to the site and any proposed geometric modifications to those streets or intersections;
X			Location, dimensions and materials of all existing and proposed driveways, vehicle and pedestrian access ways, and bicycle access ways, with corresponding curb lines;
X			Engineered construction specifications and cross-sectional drawings for all proposed driveways, paved areas, sidewalks;
X			Location and dimensions of all proposed loading areas including turning templates for applicable design delivery vehicles;
X			Existing and proposed public transit infrastructure with applicable dimensions and engineering specifications;
X			Location of existing and proposed vehicle and bicycle parking spaces with applicable dimensional and engineering information;
X			Location of all snow storage areas and/or a snow removal plan;
X			A traffic control plan as detailed in Section 1 of the Technical Manual;
N/A			Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);
N/A			Location and proposed alteration to any watercourse;
N/A			A delineation of wetlands boundaries prepared by a qualified professional as detailed in Section 8 of the Technical Manual;
N/A			Proposed buffers and preservation measures for wetlands;
X			Existing soil conditions and location of test pits and test borings;
X			Existing vegetation to be preserved, proposed site landscaping, screening and proposed street trees, as applicable;
X			A stormwater management and drainage plan, in accordance with Section 5 of the Technical Manual;
X			Grading plan;
N/A			Ground water protection measures;
X			Existing and proposed sewer mains and connections;

- Continued on next page -

X		Location of all existing and proposed fire hydrants and a life safety plan in accordance with Section 3 of the Technical Manual;
X		Location, sizing, and directional flows of all existing and proposed utilities within the project site and on all abutting streets;
X		Location and dimensions of off-premises public or publicly accessible infrastructure immediately adjacent to the site;
X		Location and size of all on site solid waste receptacles, including on site storage containers for recyclable materials for any commercial or industrial property;
X		Plans showing the location, ground floor area, floor plans and grade elevations for all buildings;
X		A shadow analysis as described in Section 11 of the Technical Manual, if applicable;
X		A note on the plan identifying the Historic Preservation designation and a copy of the Application for Certificate of Appropriateness, if applicable, as specified in Section Article IX, the Historic Preservation Ordinance;
X		Location and dimensions of all existing and proposed HVAC and mechanical equipment and all proposed screening, where applicable;
X		An exterior lighting plan in accordance with Section 12 of the Technical Manual;
N/A		A signage plan showing the location, dimensions, height and setback of all existing and proposed signs;
X		Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.

Neighborhood Meeting Certification

I, Steve Bushey, FST (consultant) hereby certify that a neighborhood meeting was held on November 13, 2014 at USM Abromson Center – Room 216; 88 Bedford Street at 5:30 p.m.

I also certify that on October 31, 2014 invitations were mailed to all addresses on the mailing list provided by the Planning Division, including property owners within 500 feet of the proposed development or within 1,000 feet of a proposed industrial subdivision or industrial zone change and on the "interested parties" list.

A digital copy of the notice was also provided to the Planning Division (jmy@portlandmaine.gov and ldobson@portlandmaine.gov) and the assigned planner to be forwarded to those on the interested citizen list who receive e-mail notices.

Signed,

Attached to this certification are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes

October 31, 2014

Dear Neighbor:

Please join us for a **Neighborhood Meeting** to discuss our request for Final Level III Subdivision and Site Plan approval to allow for the construction of the **midtown project** on Somerset Street between Elm Street and Pearl Street, and Elm Street between the Portland Trail and lot with Trader Joe's.

Meeting Location: **University of Southern Maine**
Abromson Center, Room #216
88 Bedford Street, Portland, Maine
(parking is available in the adjacent parking garage)

Meeting Date: **Thursday, November 13, 2014**

Meeting Time: **5:30-7:30 PM**

The City Code requires that property owners within 500 feet (except notices must be sent to property owners within 1,000 feet for industrial zoning map amendments and industrial subdivisions) of the proposed development and residents on an "interested parties list", be invited to participate in a neighborhood meeting. A sign-in sheet will be circulated and minutes of the meeting will be taken. Both the sign-in sheet and minutes will be submitted to the Planning Board.

If you have any questions, please feel free to contact me at 207-775-1121.

Sincerely,

FAY, SPOFFORD & THORNDIKE

Stephen R. Bushey, P.E.
Senior Principal Engineer

SRB/smk

R:\3062B - midtown Amended - Portland, ME\Admin\Permitting\Local\Final Site Plan & Subdivision\2014.10.30 Neighborhood Meeting Notice.doc

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Note: *Under Section 14-32(C) and 14-525 of the City Code of Ordinances, an applicant for a Level III development, subdivision of over five lots/units, or zone change is required to hold a neighborhood meeting within three weeks of submitting a preliminary application or two weeks of submitting a final site plan application, if a preliminary plan was not submitted. The neighborhood meeting must be held at least seven days prior to the Planning Board public hearing on the proposal. Should you wish to offer additional comments on this proposed development, you may contact the Planning Division at 874-8721 or send written correspondence to the Planning and Urban Development Department, Planning Division 4th Floor, 389 Congress Street, Portland, ME 04101 or by email to: bab@portlandmaine.gov*

778 Main Street, Suite 8
South Portland, ME 04106
T: 207.775.1121
F: 207.879.0896
www.fstinc.com

FAY, SPOFFORD & THORNDIKE
Offices in: Massachusetts, New Hampshire, Maine, Connecticut and New York

MIDTOWN PROJECT
NEIGHBORHOOD MEETING
NOVEMBER 13, 2014 AT 5:30 PM
SIGN IN SHEET

Steve Bushey	FST Inc.	775-1121
DAVE McKEONE	LABORERS 327	207-458-7700
Don Berry	LMCE 567	207 358-2181
Reggie Munson	Iron Workers 7	207-314-3530
James E. Hewey	LABORERS Local 327	207-312-1028
Kenneth TAVARES	LABORERS 327	207 951 8908
Luke J LACROIX -	LABORERS 976	207-725-7348
Jeff Grinvalsky	Portland Resident	207-408-7666
Cicely Russell		207-781-4860
Tim PARADIS	OLD PORT PORTLAND	207-871-9895
Celine Darrell	FST INC	~~885~~ 775-1121
TOM MANNING		917 951 4109
Dan McNutt		207 751 1679

DEVIN MAYO	PORTLAND RESIDENT	207-951-6381
Chris Tucker	LIUNA	207-951-6280
Lewis Overlock	LIUNA	207 951 6353
Tom Donnelly.	CCB.	88 2078873244
Steve Hirshon		3211056
BOB METCALF		774-4427
DAVID HANCOCK		(617) 262·4354
Alex Landry		alex@citymouse.us

midtown Project
Neighborhood Meeting Minutes
November 14, 2014

Consultant Team: **David Hancock, CBT Architects**
Jonathan Cox, The Federated Companies
Steve Bushey, P.E., FST
Celina Daniell, FST
Bob Metcalf, Mitchell & Associates

Location: **USM Abromson Center – Room 216**
88 Bedford Street, Portland, ME

- Steve Bushey opened the doors at approximately 5:20 p.m. and participants signed in.

- Meeting commenced at approximately 5:40 p.m.

- David Hancock introduced the project and explained that the project had been scaled down from the previous midtown submission made in December 2013.

- A participant inquired about the elevation transition at Somerset Street near the Noyes Building. He wanted clarification how why would you raise to that level since it was abutting right next to the building.

  David H. indicated they were raising the street to level to slightly below the Noyes Building

  David H. and Jonathan C. explained that the City of Portland has a long term plan to raise the Bayside area and the City had mandated The Federated Companies to raise Somerset street to offset the cost to the City.

- No further questions were asked.

- Meeting adjourned 6:30 p.m.

Prepared by:

FAY, SPOFFORD & THORNDIKE

Stephen R. Bushey, P.E.
Senior Principal Engineer

EXHIBIT 2

WRITTEN DESCRIPTION OF THE PROJECT

MIDTOWN PROJECT DESCRIPTION

The proposed project is a mixed-use residential/retail development in the Bayside area of Portland. It consists of four buildings designated *"midtownOne", "midtownTwo", "midtownThree",* and *midtownFour*" further described below. The project will contribute about 90,000 square feet of direct street access retail space at the ground level, about 445 new apartments ranging from 400 square foot studios to 1050 square foot two-bedroom units, and structured off street parking for about 820 vehicles.

The project site is bound on the north by the Bayside Trail, on the East by Pearl Street, on the South by Somerset Street, and on the West by Elm Street. Chestnut Street bisects the site. Immediately neighboring uses consist of Whole Foods to the southeast at Somerset and Franklin Streets, warehousing and open land along Somerset Street opposite the project and low-rise retail and commercial development supported by surface parking extending from the Bayside Trail to Marginal Street to the North. Low and mid-rise residential development extends up the slope from Somerset Street to Portland's downtown district along Congress Street.

The proponent's intent is to lead the way in creating a compact walkable mixed-use residential "main street" anchoring the Bayside neighborhood with continuous retail frontage along Somerset Street, while also improving the trail.

Concurrent with the project portions of both Somerset Street and the Bayside Trail will be raised above FEMA predicted 100-year storm surge/flood level between Pearl Street and Elm Street. Future projects may be expected to raise this infrastructure to the East and West of the project site. Pearl Street to the north of Somerset Street has been designed in such a way as to allow its extension to Marginal Street in the future.

midtownOne and ***Two*** are located between Pearl and Chestnut Streets. They are separated by a mews and courtyard providing public access between Somerset Street and the Bayside Trail. *midtownOne* will be a six-story building containing 80 dwelling units in a mix of studio, one, and two bedroom apartments with a main entrance on Pearl Street. The ground floor retail space is provided with frontage on Somerset Street, the mews, and the courtyard. *midtownOne's* façade will be a mix of synthetic, manufactured and recycled siding materials with vinyl windows on the upper residential levels and glass storefront in aluminum frames on the retail level at grade.

midtownTwo is a seven story-parking garage. The entire ground floor is retail space accessible from Somerset Street, Chestnut Street, and the trail. Elevator and stair cores are located in the northeast and southwest corners to provide access and egress to the mews/courtyard at one end and the corner of Somerset and Chestnut streets at the other. Garage vehicular entrance and retail service access is located at the eastern end to allow the greatest flexibility in retail leasing. This building's facades will consist of architectural precast concrete, painted railings, and "green screen" living plant panels.

The four buildings abut public space on all sides and therefore do not have "fronts" and "backs". All facades of each building are composed of the same materials.

midtownThree is located between Chestnut Street and the Bayside Trailhead connection at the intersection of Elm and Somerset Streets. It consists of 260 apartments in a mix of one and two bedroom dwelling units in a pair of five story buildings over a continuous one-story retail base. The retail space has frontage on all four sides, although access to/from the trail is prevented by a six-foot high berm containing contaminated soil abutting the building along most of its trailside facade. Apartments are accessed through a lobby and elevators on Chestnut Street. Service is located at a single point along Somerset Street contiguous with the apartment building cores. The unobstructed retail space west of these core functions allows the greatest possible flexibility to attract the variety and high quality of merchants who will make the project a success and contribute to the pedestrian desirability of Somerset Street. This building's facades feature projected bays and recesses to give an intermediate scale between the pedestrian scale of the shop fronts and the larger scale created by the block layout of this part of the Bayside neighborhood. Materials are in the same pallet as midtownOne; all buildings will feature neutral gray colors with strong colored accents.

midtownFour is of similar construction to *midtownOne* and *midtownThree*; five stories of residential development over one story of retail space. This building will have 105 studio or loft apartment units with a lobby entry facing Elm Street near the trail. Retail frontage will face Elm Street and the trail. The building's service entrance will be located to the east adjacent to the building's entrance. Move in/move out, delivery and trash/recycling vehicles will use the pull-off provided on Elm St for convenient access to these entrances. This building's façade will also be composed of synthetic, manufactured and recycled siding materials with vinyl windows on the upper residential levels and glass storefront in aluminum frames on the retail level at grade.

In total, the project will consist of approximately 715,100 square feet of new construction in the four buildings. The garage will provide about 828 off-street parking spaces, providing more than one space per dwelling unit and four spaces per thousand square feet of retail space. The development of the midtown buildings will provide construction jobs for the next two to three years and permanent retail jobs to support Portland's entrepreneurial and creative economies.

The buildings will form essentially continuous active street frontage along Somerset, Chestnut, Pearl, and Elm Streets and along the Bayside Trail. The height of the residential buildings at 75 feet, and of the parking garage at 92 feet, are substantially lower than the 105 and 125 foot heights allowed by the B-7 height overlay map for these parcels. The design of the buildings will be in keeping with the city's comprehensive plan for the district. This project will bring great enhancement to Somerset Street, provide residential development immediately adjacent and overlooking the Bayside Trail, and will provide the catalyst for a walkable retail district from Whole Foods to Trader Joe's in the spirit of Portland's other great streets.

A capsule summary of the areas and unit counts in each of the proposed buildings follows on the next page. This also includes a total area of each use and apartment type in the project.

*midtown*One Building:
7,500 sq. ft. net retail area
15 studio apartments, 1 full bath each, average 455 net sq. ft. each
40 1BR apartments, 1 full bath each, average 715 net sq. ft. each
25 2BR apartments, 2 full baths each, average 955 net sq. ft. each
[each apartment and studio has one kitchen sink, dishwasher, and washer/dryer]
[residential heating and cooling by electric split-system heat pumps; retail AC by air-cooled electric AC machines]
Total 80 apartments, net rental area 59,300 sq. ft. +/- Gross building area 90,600 sq. ft. +/-

*midtown*Two Building:
32,000 sq. ft. net retail area
828 total (including 17 handicap and 25 coin-op EV charging stations) parking spaces
[garage is naturally ventilated; elevator machine rooms will have electric heat pumps; retail AC by air-cooled electric AC machines]
Gross building area 266,500 sq. ft. +/-

*midtown*Three Building:
44,000 sq. ft. net retail space
90 1BR apartments, 1 full bath each, average 600 net sq. ft. each
170 2 BR apartments, 2 full baths each, average 800 net sq. ft. each
[each apartment has one kitchen sink, dishwasher, and washer dryer]
[residential heating and cooling by electric split-system heat pumps; retail AC by air-cooled electric AC machines]
Total 260 apartments, net rental area 190,000 sq. ft. +/- Gross building area 289,000 sq. ft. +/-

*midtown*Four Building:
8,000 sq. ft. net retail area
105 studio apartments, 1 full bath each, average 400 net sq. ft. each [each studio has kitchen sink and dishwasher
no washer dryers in units; building will have coin-op W/Ds
[residential heating and cooling by packaged terminal air conditioners; retail AC by air-cooled electric AC machines]
Total 105 studio/lofts; Net rental area 42,000 sq. ft. +/- Gross building area 69,000 sq. ft. +/-

Total *midtown* Project:
Total 91,500 sq. ft. +/- net retail space
Total 828 off-street parking spaces
Total 291,300 sq. ft. +/- net rental area
Total 445 apartments, of which:
  120 studios
  130 1BR
  195 2BR
Total 715,100 sq. ft. +/- gross building area

Prepared by CBT Architects

November 14, 2014

SURFICIAL GEOLOGY MAP
midtown
PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS - SURF LAYER

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

DRAWN:	DED
CHECKED:	WGH
DATE:	NOV 2012
FILENAME:	3062-GEOLOGY
SCALE:	1 inch = 1,000 feet

FIGURE

10

NWI MAP
midtown
PORTLAND, MAINE

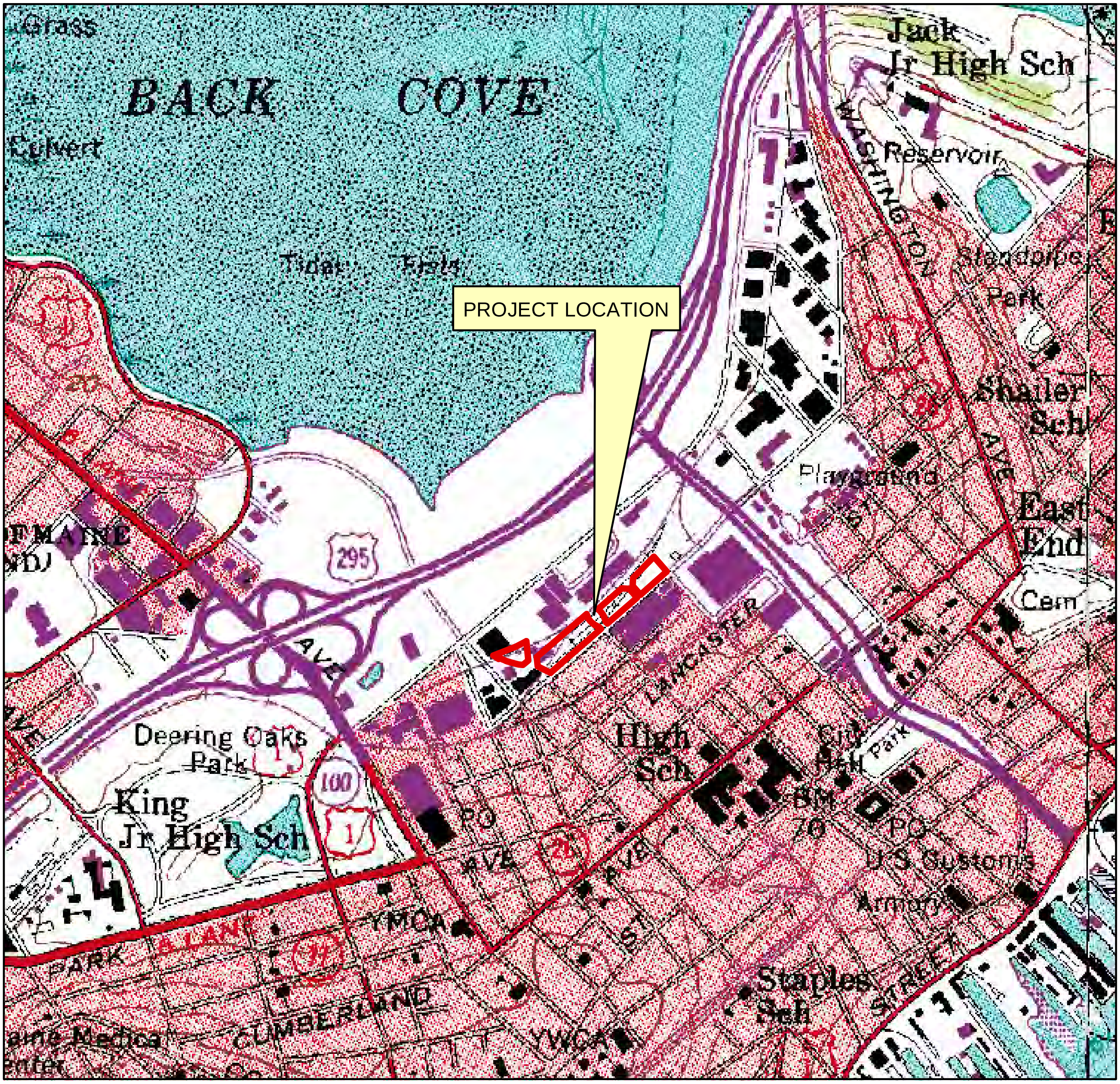
SOURCE: CITY OF PORTLAND

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

DRAWN:	DED
CHECKED:	WGH
DATE:	NOV 2012
FILENAME:	3062-NWI
SCALE:	1 inch = 1,000 feet

FIGURE

11



PROJECT LOCATION

N
W E
S

USGS LOCATION MAP
midtown
PORTLAND, MAINE

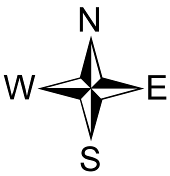
SOURCE: MAINE OFFICE OF GIS - MAPS

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

DRAWN: DED
CHECKED: WGH
DATE: NOV 2012
FILENAME: 3062-USGS
SCALE: 1 inch = 1,000 feet

FIGURE

2



TAX MAP
midtown
PORTLAND, MAINE

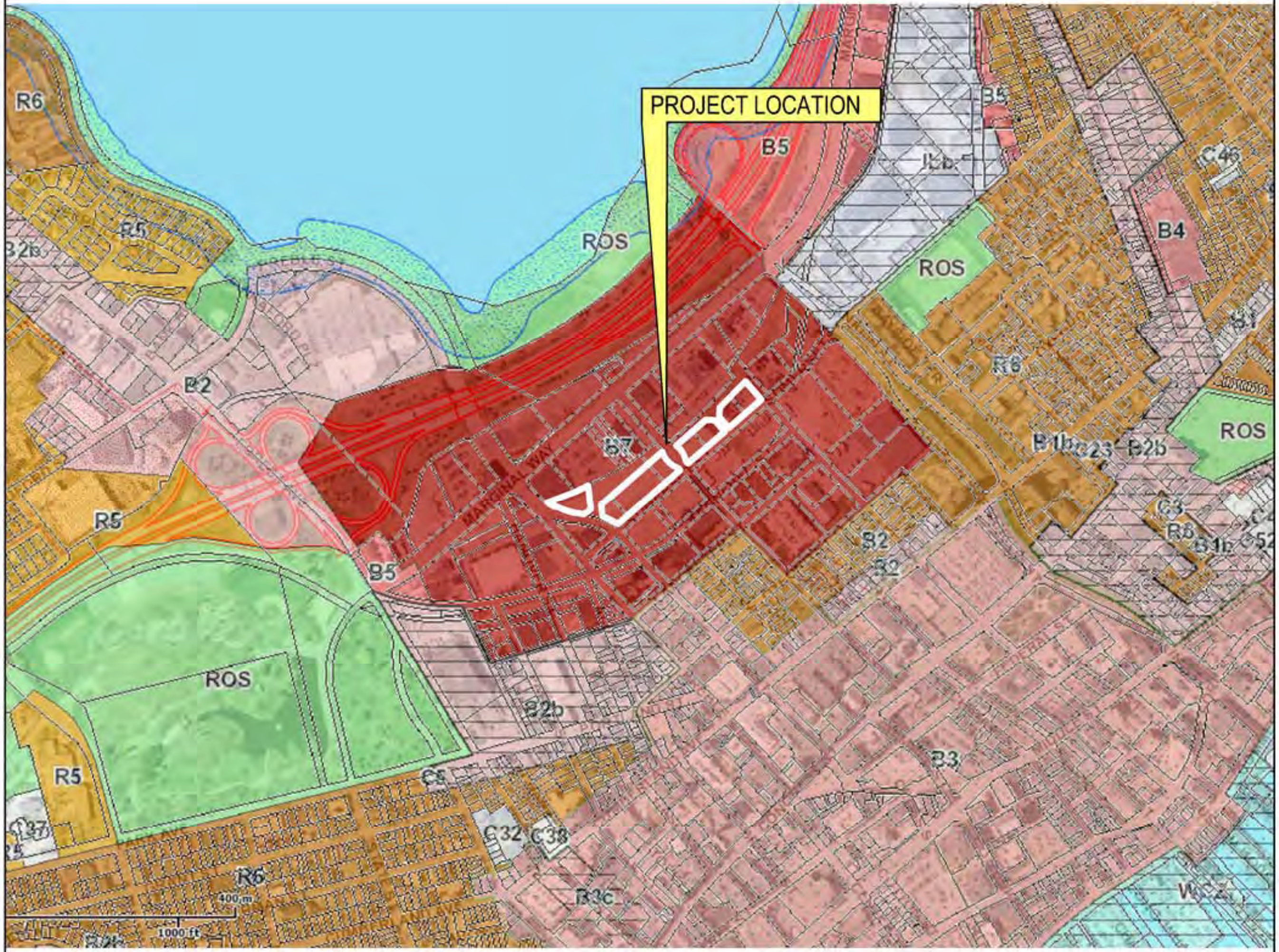
SOURCE: CITY OF PORTLAND

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

DRAWN:	DED
CHECKED:	WGH
DATE:	NOV 2012
FILENAME:	3062-TAX MAP
SCALE:	1 inch = 1,000 feet

FIGURE

3



ZONE B7 - URBAN COMMERCIAL BUSINESS

ZONING MAP

midtown

PORTLAND, MAINE

SOURCE: CITY OF PORTLAND

DeLuca-Hoffman Associates, Inc.
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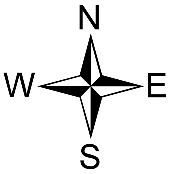
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

DRAWN: DED
CHECKED: WGH
DATE: NOV 2012
FILENAME: ZONING
SCALE: 1" = 2000'

FIGURE

4



AERIAL PHOTOGRAPH
midtown
PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS - MAPS

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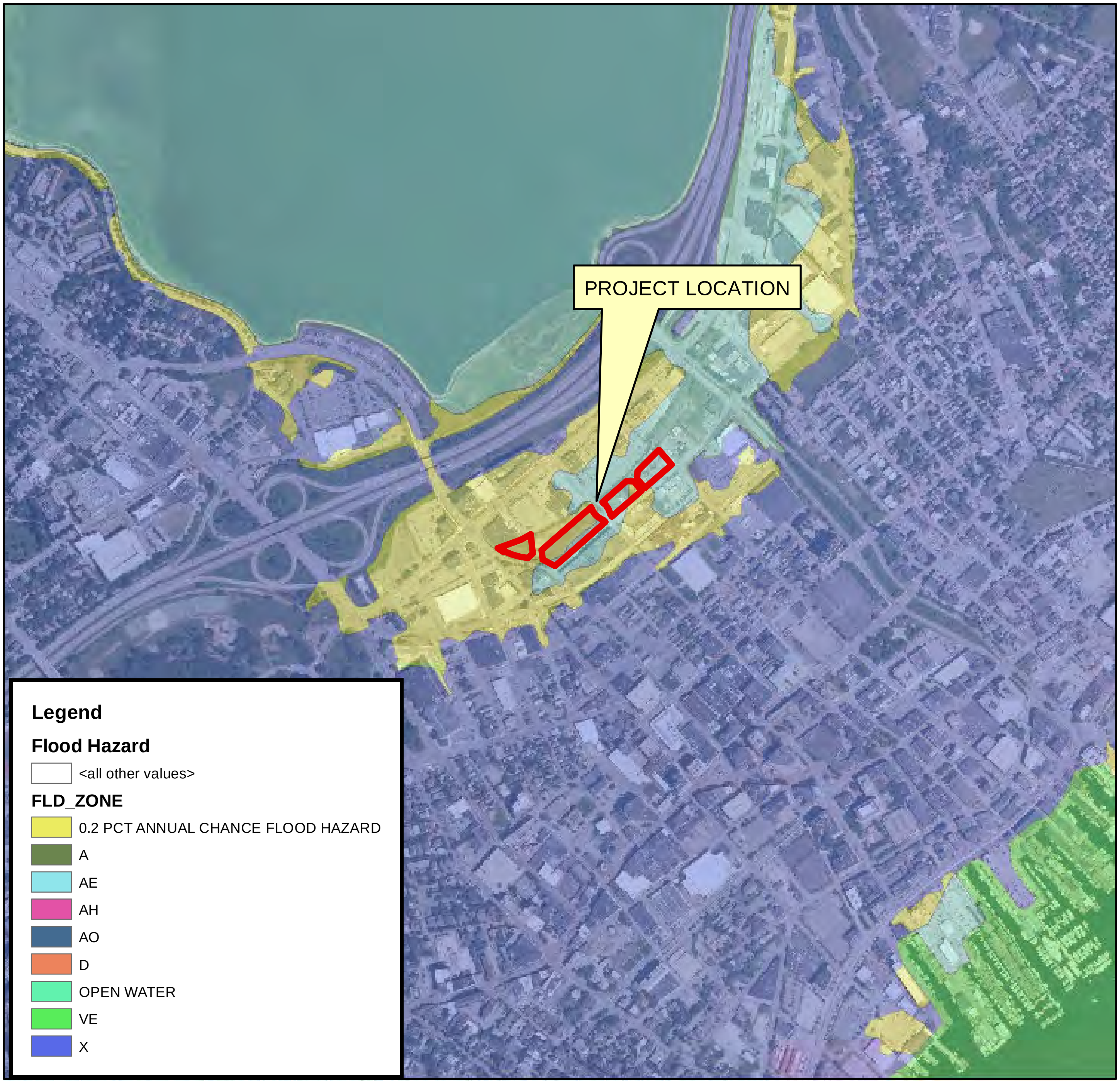
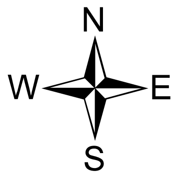
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

DRAWN:	DED
CHECKED:	WGH
DATE:	NOV 2012
FILENAME:	3062-AERIAL
SCALE:	1 inch = 1,000 feet

FIGURE

5





FLOOD MAP
midtown
PORTLAND, MAINE

SOURCE: CITY OF PORTLAND

DeLuca-Hoffman Associates, Inc.
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207-775-1121
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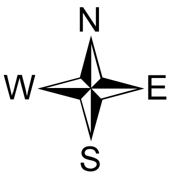
DRAWN:	DED
CHECKED:	WGH
DATE:	NOV 2012
FILENAME:	3062-FLOOD
SCALE:	1 inch = 1,000 feet

FIGURE

7

Soil Legend		
Symbol	Description	Slope
Au	Au Gres loamy sand	--
Cu	Cut and Fill land	--



SOILS MAP
midtown
PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

DRAWN:	DED
CHECKED:	WGH
DATE:	NOV 2012
FILENAME:	3062-SOILS
SCALE:	1 inch = 1,000 feet

FIGURE

8

SAND AND GRAVEL AQUIFER MAP
midtown
PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
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DRAWN:	DED
CHECKED:	WGH
DATE:	NOV 2012
FILENAME:	3062-AQUIFER
SCALE:	1 inch = 1,000 feet

FIGURE

9

EXHIBIT 3

EVIDENCE OF TITLE, RIGHT OR INTEREST

The following information is included with this Exhibit:

- Corporate Guaranty Agreement
- Purchase and Sale Agreement

September 6, 2012 by LCW
O:\Bayside - Federated Companies\Corporate Guaranty\2final redline of CORPORATE GUARANTY AGREEMENT for Execution.docx

CORPORATE GUARANTY AGREEMENT

THIS CORPORATE GUARANTY AGREEMENT, (this "Guaranty"), is made as of the 15th day of Oct, 2012, by **LEGACY PARK APARTMENTS, LLC**, a Florida limited liability company, with a principal place of business at 801 Brickell Avenue, Suite 720, Miami, Florida 33131 ("Guarantor"), and, jointly and severally, by **THE FEDERATED COMPANIES LLC** , a Florida limited liability company, with a principal place of business at 801 Brickell Avenue, Suite 720, Miami, Florida 33131, see below and **THE CITY OF PORTLAND, MAINE**, a body politic and corporate with a place of business at 389 Congress Street, Portland, Maine 04101, ("City").

WHEREAS Guarantor is the assignee, by virtue of an Assignment and Assumption Agreement effective June 27, 2011, ("Assignment"), of a Purchase and Sale Agreement between The City of Portland, Maine, ("City"), effective June 23, 2011, ("Agreement"), as amended, for the purchase of certain blighted and brownfield real property located on Somerset Street, Portland, Maine known as Lots 1, 2, 3, 5, 6, 7,8 and a portion of Lot 9, (collectively, "the Land"), consisting of approximately 3.25 acres formerly known as the "Bayside Railyard";

WHEREAS City, in order to create jobs and economic growth for the Citizens of Portland, Maine, has agreed to make a $9,007,000.00 contribution, ("City Grant Funds"), to Legacy Park Apartments, LLC from funds being provided to the City by the U.S. Department of Housing and Urban Development, ("HUD Funds"), toward the expense of the design, development and construction of a garage, with no fewer than 700 parking spaces on a portion of Lot 5 and all of Lots 6 and 7 and a portion of Lot 9, ("Garage"), pursuant to the terms of a Parking Garage Contribution and Funding Agreement of even or near date hereto between City and Guarantor. ("Parking Garage Agreement").

WHEREAS City, in order to induce Guarantor to enter into this Guaranty and a Job Creation Agreement, hereby agrees to pay the City Grant Funds to Guarantor, Legacy Park Apartments, LLC or its nominee ("Receiving Entity") in accordance with the terms of the Parking Garage Agreement.

WHEREAS Guarantor, contingent on receiving the City Grant Funds, hereby makes the following Guaranty, subject to the conditions contained herein.

NOW THEREFORE in consideration of the mutual promises contained herein and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, City hereby agrees to pay the City Grant Funds to the Receiving Entity and Guarantor guarantees to City that:

1. Guaranty: Guarantor shall construct and substantially complete Phase I of the Project, as more particularly described in the attached Phase I Site Plan, Design Guidelines, and Specifications Sheet, ("Exhibit 4," parts 1, 2, and 3), within three (3) years after the date of on which a total of $1,000,000.00 in City Grant Funds has been requisitioned by the Receiving Entity and disbursed by the City to the Receiving Entity ("Guaranty Deadline"). The annual penalty for not meeting the Guaranty Deadline shall be limited to Guarantor paying to City, on an annual basis for a maximum term of 17 years, the annual difference between the actual tax revenue realized from Phase I, as constructed, and the Phase I tax revenue the City would have received had Phase I been substantially completed (The "Phase I Projected Value") by the Guaranty Deadline. The Phase I Projected Value shall be the City of Portland Asessor's estimated assessed value of the Phase I property (real and personal), made on the April 1 following the Guaranty Deadline, and based on the

description of Phase I in Exhibit 4, and the related specifications and design guidelines provided by the Guarantor on or about July 1, 2012. Notwithstanding anything in the forgoing, this Guaranty is contingent on the full $9,007,000.00 in City Grant Funds being contributed to Guarantor for the construction of the Garage. Guarantor's aggregate, maximum penalty liability under this Guaranty shall not exceed $9,007,000. Finally, regardless of when substantial completion of all buildings in Phase I is achieved, this Guaranty shall automatically terminate, Guarantor shall have zero financial liability under this Guaranty and City shall provide Guarantor with a release from any financial liability under this Guaranty effective as of the earlier of the date of substantial completion of Phase I or as of the date of the timely and valid exercise of the City's right of repurchase under Section 9 of the Parking Garage Agreement, as amended. For purposes of this Guaranty, "substantial completion" is deemed to mean a structure having received a Certificate of Occupancy from the City of Portland, and the complete 'fit-out' of all commercial portions of Phase I.

The rights and obligations under the Agreement between the parties hereto, and under the Parking Garage Contribution Agreement of near or even date, are cumulative and in addition to the rights described herein.

2. Warranties and Representations: In connection with the foregoing, City and Guarantor hereby make the following warranties and representations:

(a) The financial liability limitations of this Guaranty are intended by the parties to supersede and amend the defense and indemnification obligations of the Buyer/Guarantor to City in regard to the City Grant under Section 11 of the Agreement. Similarly, the provisions of the Job Creation Agreement are intended by the parties to supersede and amend the job creation duties and obligations of the Buyer/Guarantor to City under Section 11 of the Agreement. Accordingly, this Guaranty is contingent upon the City paying the City Grant Funds to Guarantor in accordance with the terms of the Parking Garage Agreement, irrespective of the source of funds utilized by the City for such City Grant Funds.

(b) Apart from the express modifications stated in this Guaranty, the Parking Garage Agreement and Job Creation Agreement, the Agreement for the purchase of the Land, as assigned and amended, remains in full force and effect and has not been otherwise modified, amended or terminated.

(c) Attached as Exhibit 1 to this Guaranty is a true, accurate and complete copy of the Purchase and Sale Agreement and First Amendment thereto.

(d) Attached as Exhibit 2 to this Guaranty is a true, accurate and complete copy of the Assignment.

(e) Attached to Exhibit 3 to this Guaranty is a true, accurate and complete copy of the Parking Garage Agreement.

(f) Attached as Exhibit 4 to this Guaranty is the, Phase I Site Plan, Design Guidelines, and Specifications Sheet.

(g) Attached as Exhibit 5 to this Guaranty is a true, accurate and complete copy of the Job Creation Agreement.

(h) Neither the Guarantor, nor the City is in default of the Agreement.

3. Successors and Assigns and Enforcement: This Guaranty shall be binding upon and inure to the benefit of the Guarantor's respective successors and assigns. Guarantor pledges that:

(a) it will not assign its rights hereunder without the City's consent, and only to a related entity;

(b) it will permit the City's Corporation Counsel, Manager, Director of Economic Development and Finance Director to review balance sheet, to satisfy themselves of the strong solvency and net worth of both the Guarantor and The Federated Companies LLC;

(c) it will not substantially change such strong solvency and net worth without notifying the City of such changes;

(d) it will not alter its corporate structure or transfer substantially all its assets without providing the City a replacement Guaranty from another entity with strong solvency and net worth, or in the alternative, a letter of credit for the obligations hereunder; and

(e) In any legal proceeding with respect to the obligations created by this Guaranty, all parties hereto waive jury trial, agree that the Maine Superior Court shall have exclusive jurisdiction, that the substantive and choice of law used shall be Maine law and that the prevailing party shall be awarded the reasonable attorneys' fees and costs incurred in regard to any legal proceeding arising out of the obligations created by this Guaranty, including, should the City prevail, a reasonable hourly fee for the services of the City's employee attorneys, that is, its Corporation Counsel.

(f) This Agreement and the performance hereof by Guarantor will not contravene any law, judgment, order, injunction, decree or any contractual restriction or arrangement binding on Guarantor, at the time execution hereof. All parties hereto acknowledge that this Agreement is a legally enforceable instrument and the obligations stated herein are likewise legally enforceable, and that at the time of execution hereof they have no reason to believe otherwise.

4. Counterparts: This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

5. Amendments: This Guaranty may not be amended in any respect whatsoever except by a further agreement, in writing, fully executed by each of the parties.

(Signature page follows on p. 4.)

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their duly authorized representatives under seal as of October 04, 2012.

LEGACY PARK APARTMENTS LLC, a Florida limited liability company

By:______________________________
Jonathan Cox, Manager

Brett DePetrillo
COMMISSION # DD992811
EXPIRES: MAY 17, 2014
WWW.AARONNOTARY.com

CITY OF PORTLAND

By:______________________________
Mark H. Rees
City Manager

JOINDER

THE FEDERATED COMPANIES LLC, a Florida limited liability company, with a principal place of business at 801 Brickell Avenue, Suite 720, Miami, Florida 33131, hereby joins in this Guaranty, agreeing that it is jointly and severally liable for, and hereby makes, the same guaranty and other obligations as described in the paragraphs numbered 1, 2 and 3 above, subject to the terms and conditions stated therein.

THE FEDERATED COMPANIES, LLC, a Florida limited liability company

By:______________________________
Jonathan Cox, Manager

____
Finance Director
City of Portland, Maine

APPROVED AS TO FORM:

____
CORPORATION COUNSEL'S OFFICE

September 6, 2012 by LCW
O:\Bayside - Federated Companies\Corporate Guaranty\2final redline of CORPORATE GUARANTY AGREEMENT for Execution.docx

EXHIBIT 1

[P&S]

September 6, 2012 by LCW
O:\Bayside - Federated Companies\Corporate Guaranty\2final redline of CORPORATE GUARANTY AGREEMENT for Execution.docx

EXHIBIT 2

[Assignment to Legacy Park]

FIRST AMENDMENT TO PURCHASE AND SALE AGREEMENT

THIS FIRST AMENDMENT TO PURCHASE AND SALE AGREEMENT, ("Amendment"), is entered into as of Oct. 15, 2012, by and between **THE CITY OF PORTLAND, MAINE**, a body politic and corporate with a place of business at 389 Congress Street, Portland, Maine 04101 ("Seller") and **LEGACY PARK APARTMENTS LLC**, a Florida limited liability company with a place of business at 801 Brickell Avenue, Suite 720, Miami, Florida 33131, or its nominee or assignee ("Buyer"). (Seller and Buyer are also hereinafter referred to individually as "party" or, collectively, "parties").

WHEREAS Buyer is the assignee, by virtue of an Assignment and Assumption Agreement, ("Assignment"), effective June 27, 2011 of a Purchase and Sale Agreement, effective June 23, 2011, between The Federated Companies LLC and Seller ("Agreement"). Assignment and Agreement are attached hereto and incorporated herein by reference, collectively, as Exhibit "A".

WHEREAS Section 11 of the Agreement requires that the Seller and Buyer enter into a formal agreement stipulating to the terms and conditions of the Seller's contribution of HUD Funds during the Inspection Period.

WHEREAS Section 11 of the Agreement provides that the Inspection Date shall be extended until the parties have reached agreement on the use of HUD Funds for the garage.

NOW THEREFORE for good and valuable consideration, including the mutual promises made below, the receipt and sufficiency of which are hereby acknowledged, the parties hereby agree that the Agreement is amended as follows:

A. Section 4 of the Agreement is amended by deletion of the original text of Paragraph 2 and insertion of the following text in its place:

"The term "Inspection Date" means midnight on the sixtieth (60th) day following full execution by the parties and HUD approval, if HUD approval is required, of the formal agreement stipulating the terms and conditions of the HUD Funds contribution identified under Section 11 of this Agreement."

B. Section 5 of the Agreement is amended by deletion of the original text and insertion of the following in its place:

C. Section 5. **Use Restrictions and Environmental Matters**. Buyer understands that lots 1, 2, 3, 5 and a portions of lot 6 and a portion of lot 9 were encumbered with deeds restrictions, including but not limited to a restriction on residential uses on a portion of the Property. Pan Am/Guilford, the holder of those restrictions has released these restrictions, and before the start of construction by Buyer the Seller will secure environmental liability insurance on the Railyard to protect Pan

Am/Guilford, which was a condition of its releasing these restrictions.

The Seller, through its consultant and others has undertaken a number of environmental studies which are referenced in Exhibit B to this Amendment. The Maine Department of Environmental Protection (hereinafter "DEP") has issued one or more letter(s) confirming their approval of a Voluntary Response Action Program ("VRAP") Plan for the former rail yard property which is contained within lots 1, 2, 3, 5 and a portion of lot 6 and a portion of lot 9 (hereinafter "Railyard"). The VRAP includes a remediation plan approved on the Railyard property by the DEP. As part of the development plan for the Railyard property, Buyer is responsible for complying with the remediation VRAP Plan for the Property. To the extent required by law, the approval of the U.S. Environmental Protection Agency shall also be obtained for both of these VRAP Plans.

The Seller has commenced review of the environmental conditions for on the portion of Property which is contained within a portion of Lot 6 and Lots 7, 8 and a portion of Lot 9, (hereinafter "Scrapyard"). The Seller will secure a VRAP for the Scrapyard (subject to Buyer's input and approval) and Buyer shall undertake remediation in accordance with the VRAP. The Seller will reimburse Buyer for its first Fifty Thousand Dollars ($50,000.00) of actual expense for such remediation, and all other costs of remediation, which shall fully comply with such VRAP, shall be paid by the Buyer from City Grant Funds received from City. The Seller will work together with the Buyer to ensure the timely remediation in accordance with the Buyer's development plans.

Although Buyer is under no obligation to obtain such environmental liability insurance, should Buyer, at Buyer's sole election, secure environmental liability insurance on the Scrapyard and/or any other portion of the Property, Buyer will use best efforts to secure for the Seller the option to obtain coverage under such insurance policy(ies) as an Additional Insured, by endorsement in any other form; provided, however, that any additional cost for such additional coverage shall be paid by the Seller and shall not relieve Seller of the duty of providing the environmental liability insurance required to provide on the Railyard for the benefit of PanAm/Guilford described above.

D. Section 6 of the Agreement is amended by adding, at the end of the existing first sentence, "including but not limited to Site Plan approval from the City of Portland, Subdivision Approval Amendment(s) from the City of Portland, and any amendments to the Land Use Code of the City of Portland."

E. The first sentence of Section 11 of the Agreement is amended by deleting the existing text, and replacing it with the following:

Contingent on the full disbursement of $9,007,000.00 in City Grant Funds from Seller to Buyer as provided in the Parking Garage Contribution Agreement, and as a condition of this sales transaction, the Buyer will construct, at its expense, a parking garage on (approximately, as the exact location is not yet set), a portion of Lot 5 and all of Lots 6 and 7 and a portion of Lot 9 which shall contain not less than 700 parking spaces. ("Garage").

F. Section 11 of the Agreement is amended by deleting the original text of numbered Paragraph 4 and the insertion of the following text in its place:

"Buyer shall construct the Garage using sustainable and energy efficient construction methods, including, but not limited to, energy efficient lighting."

G. Section 15 of the Agreement is amended by deletion of the original text and insertion of the following in its place:

"Section 15. Rights of Seller to Repurchase Undeveloped Property.

(a) If three years after the substantial completion of the Garage, construction activity has not been commenced and diligently pursued on any other portions of the Property, the Seller shall have a one-time right to notify Buyer in writing of such default under this Section within thirty (30) days of such default and Buyer shall have ninety (90) days thereafter to cure such default. Provided, however, that there shall be no event of default by Buyer if the City is in default of any provision of the Parking Garage Contribution Agreement. If Seller fails to provide Buyer with written notice of default within thirty (30) days of such default, then the provisions of this Section shall be deemed waived by Seller.

(b) If the Garage does not reach substantial completion within three years after the date of closing on the purchase by Buyer of the Property related to the Garage then the Seller shall have a one-time right to notify Buyer in writing of such default under this Section within thirty (30) days of such default and Buyer shall have ninety (90) days thereafter to cure such default. If Seller fails to provide Buyer with written notice of default within thirty (30) days of such default, then the provisions of this Section shall be deemed waived by Seller.

If Buyer fails to cure a default under either 15(a) or 15(b) above, the Seller shall have the right or remedy, but not the obligation, which is described in this paragraph in concept: namely, to repurchase any or all such portions of the undeveloped Property at Buyer's Purchase Price (prorated with respect to the quantity of land, as necessary). Seller may, at the closing of such repurchase, use such consideration (that is, the prorated portion of Buyer's Purchase Price) to pay-off and remove any and all then existing mortgages, liens, assessments or other encumbrances on the undeveloped Property being repurchased. Any amounts by which such then existing mortgages, liens, assessments and other encumbrances exceed such consideration, shall continue to the obligations of Buyer, or its successors or assigns; and Buyer, its successors or assigns, shall indemnify Seller with respect to such excess amounts.

The City acknowledges that Legacy Park will most likely use the entire Property as collateral for a construction loan for the purpose of developing and building all portions of the project. The City therefore agrees to work on documents at the time of such financing, with Buyer and its construction lender, to make it possible for the City to have the remedy described above in concept, and to also permit such construction financing. Buyer agrees that while this right or remedy exists as described in the paragraph above no portion of the Property will not be mortgaged for any purpose other than development and construction of the Project.

It is noted here that the 'Parking Garage Contribution Agreement' contains Seller's remedies with respect re-acquisition of the parking garage portion of the Property, and the Rights created by this Section do not pertain to that property." The rights and obligations under the Corporate Guaranty Agreement and the Parking Garage Contribution Agreement, both of near or even date are cumulative and in addition to the rights described herein.

H. The original description of the Land in the Purchase and Sale Agreement is hereby modified to include this conveyance a portion of Lot 9, and the "Exhibit ~~A~~C" to the Purchase and Sale Agreement is hereby replaced with the "Exhibit ~~A~~C to the Purchase and Sale Agreement, [2012]" attached hereto.

Except as amended above, all other terms and conditions of the Agreement remain unaffected by this Amendment, are in full force and effect between the parties and are hereby ratified by the parties.

All terms capitalized herein shall have their original meaning as defined in the Agreement unless otherwise defined herein. In the event of conflicting provisions or language in this Amendment and the Agreement, this Amendment is intended to control.

This Amendment may be signed in counterparts, which shall be construed together as one document.

IN WITNESS WHEREOF, the parties hereto have executed this Amendment as of the day and year first written above.

SELLER:

CITY OF PORTLAND

By: ______________________
Name: Mark H. Rees
Title: City Manager
Date of Execution: 10-15-12

BUYER:

THE FEDERATED COMPANIES, LLC

By: ______________________
Name: Jonathan Cox
Title: Manager
Date of Execution: 10/5/12

September 6, 2012 by LCW
O: Bayside - Federated Companies Purchase and Sale Agreement 2final FIRST AMENDMENT TO PURCHASE AGREEMENT for Execution.doc

Approved: Ellen Sanborn, Finance Director

Approved as to Form: Corp. Counsel

EXHIBIT "A"
TO FIRST AMENDMENT TO PURCHASE AND SALE AGREEMENT

[insert Assignment AND P&S]

EXHIBIT A

ASSIGNMENT AND ASSUMPTION AGREEMENT

THIS ASSIGNMENT AND ASSUMPTION AGREEMENT (this "Agreement") is made as of the 27th day of June, 2011, by and between **THE FEDERATED COMPANIES, LLC,** a Florida limited liability company, with an address of 404 Washington Avenue, Suite PH, Miami Beach, FL 33139 (together, the "Assignor") and **LEGACY PARK APARTMENTS LLC,** a Florida limited liability company, with an address of 404 Washington Avenue, Suite PH, Miami Beach, FL 33139 (the "Assignee").

For and in consideration of the sum of One Dollar ($1.00) and other valuable consideration to it in hand paid by the Assignee to the Assignor and the mutual covenants herein contained, the receipt and sufficiency of the foregoing consideration being hereby acknowledged, the parties hereto agree as follows:

1. <u>**ASSIGNMENT**</u>**:** The Assignor hereby assigns, transfers, sets over and conveys to the Assignee all of the Assignor's right, title and interest in, to and under that certain Purchase and Sale Agreement by and between The City of Portland, Maine (the "City") and Assignor, with respect to certain real property described therein (the "<u>Purchase Agreement</u>").

2. <u>**ASSUMPTION**</u>**:** The Assignee does hereby assume and agree to perform all of the Assignor's obligations with respect to the Agreement accruing from and after the date hereof. Assignee acknowledges that Assignor has posted the required deposit under the Purchase Agreement and agrees that such deposit shall be refunded to Assignor upon Assignee's closing on the acquisition under the Purchase Agreement.

3. <u>WARRANTIES AND REPRESENTATIONS</u>: In connection with the foregoing assignment and assumption of the Purchase Agreement, the Assignor does hereby make the following warranties and representations:

(a) The Purchase Agreement remains in full force and effect and has not been modified, amended or terminated;

(b) Attached as <u>Exhibit A</u> to this Agreement is a true, accurate and complete copy of the Purchase Agreement; and

(c) Neither the Assignor nor, to the best of Assignor's knowledge without inquiry, the City is in default of the Purchase Agreement.

With the exception of the foregoing warranties, this Assignment is made without recourse or representation or warranty, express, implied or by operation of law, of any kind and nature whatsoever.

4. **<u>SUCCESSORS AND ASSIGNS</u>:** This Agreement shall be binding upon and inure to the benefit of the Assignor and the Assignee and their respective successors and assigns.

5. **COUNTERPARTS:** This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

6. **AMENDMENTS:** This Agreement may not be amended in any respect whatsoever except by a further agreement, in writing, fully executed by each of the parties.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their duly authorized representatives under seal as of June 27, 2011.

ASSIGNOR:

THE FEDERATED COMPANIES, LLC, a Florida limited liability company

By:______________________________
Jonathan Cox, Manager

ASSIGNEE:

LEGACY PARK APARTMENTS LLC, a Florida limited liability company

By:______________________________
Jonathan Cox, Manager

Exhibit A

PURCHASE AND SALE AGREEMENT

This Purchase Agreement (this "Agreement"), is entered into as of the Effective Date, as defined below, by and between The City of Portland, Maine a body politic and corporate with a place of business at 389 Congress Street, Portland, Maine 04101 ("Seller") and The Federated Companies LLC, a Florida limited liability company with a place of business at 404 Washington Avenue, Suite PH, Miami Beach, FL 33139 or its nominee or assignee ("Buyer").

WHEREAS, Seller is the Owner of a certain real property located on Somerset Street, Portland, Maine which contains approximately 3.25 acres and which is known as lots 1, 2, 3, 5, 6, 7 and 8, which land is further described in Exhibit A, attached hereto and incorporated herein (collectively "the Land") and

WHEREAS, Seller seeks to sell the Land for development purposes; and

WHEREAS, Buyer desires to acquire the Land from Seller, and Seller seeks to sell the same to Buyer on such terms as are set out herein,

Now Therefore, in consideration of the foregoing and for good and valuable consideration, the parties intend to be legally bound as follows:

Section 1. Property. The Land, all rights and privileges appurtenant to the Land and all improvements located on the land, are referred to collectively as the "Property." The Seller agrees to sell the Property to Buyer on the terms and conditions contained herein. The parties understand and agree that a portion of land representing a trail access from Somerset Street as shown on Exhibit A-1, may need to be adjusted depending on the nature and extent of development on Lots 6 and 7. The trail access adjustment shall be subject to the mutual agreement of the parties on the placement of the lot lines and the trail access

Section 2. Purchase Price and Deposit. The "Purchase Price" for the Property shall be Seven Hundred Thousand Dollars ($700,000) per acre and shall be paid in cash (or by certified or bank check or federal funds wire transfer) at the Closing as defined in Section 8 of this Agreement subject to the adjustments described in this Agreement. The calculation of the acreage of the Property shall be made by the Seller providing, not later than forty-five (45) days after the Effective Date, an ALTA survey, satisfactory to Buyer and Buyer's lender, of the Property, excluding that portion of land utilized for trail access as described above. Within ten (10) business days after the Effective Date of this Agreement, Buyer shall deliver to a nationally-recognized title company ("Escrow Agent") the sum of Twenty Five Thousand Dollars ($25,000) (the "Initial Deposit"), which shall be held in escrow in accordance with the terms of Section 14 of this Agreement. The Initial Deposit, and any other deposits made by Buyer under the terms of this Agreement shall be held by the Escrow Agent, and is referred to collectively as the "Deposit." The Deposit shall be applied toward the Purchase Price at the Closing unless otherwise forfeited by the Buyer pursuant to the terms of this Agreement.

Section 3. Title.

(a) Seller shall convey its interest in the Property to Buyer by a good and sufficient quitclaim deed with covenant (the "Deed"). The Deed shall convey insurable title to the Property and be free of encumbrances except (i) zoning, environmental and subdivision laws, rules, regulations and restrictions and other land use matters; and (ii) any "Defects of Title" (as defined below) accepted or waived by Buyer pursuant to Section 3(b). Buyer acknowledges that: the deed of conveyance shall contain a restriction lasting for 30 years, including the 30th year, starting on the closing date, that, in the event that the property or any portion thereof shall be exempt from real and personal property taxes then a yearly payment by the then-owner of the exempt portion shall be made in lieu of taxes equivalent to the property taxes that would otherwise be paid on the exempt portion of the real and personal property situated on Property, which restriction shall also confirm that Buyer and its successors and assigns shall possess and be vested with all rights and privileges as to abatement and appeal of valuations, rates and the like as are accorded owners of real and personal property in Maine. For purposes of this Agreement, insurable title means title which an insurance company with a rating of B+ or better by Standard & Poor's (or other comparable rating by another rating organization) licensed to do business in Maine is willing to insure upon payment of a premium at customary and filed rates on a standard ALTA Form B Policy (rev. October 17, 1992) with no exceptions listed on Schedule B, Part I thereof, except for the standard exceptions and Defects of Title pursuant to paragraph 3(b) below, with no indemnification or legal opinion to be required from Buyer to issue such policy, and with the creditor's rights exception deleted.

(b) On or before the date that is forty-five (45) days after the Effective Date, Buyer shall notify Seller of any defects in title that would make Seller unable to give title to the Property as herein stipulated or which would otherwise adversely affect Buyer's intended development of the Land (any of which is called herein a "Defect of Title"). Buyer shall be deemed to have waived any objection to any Defect of Title that existed as of the Effective Date if Buyer fails to notify Seller of such Defect of Title on or before the end of such 45-day period. With respect to the existence of any Defect of Title that does not exist on the Effective Date but which arises prior to the Closing Date, Buyer shall notify Seller of any such Defect of Title on or prior to the Closing Date as defined in Section 8 hereof. Seller shall have, at its option, a period of not more than sixty (60) days after receipt of notice(s) of any defect in title within which to remedy or cure any Defect of Title and Seller agrees to use good faith efforts to cure such Defect of Title. If the Closing Date shall fall within the said 60-day period, it shall be extended to the date that is the date that is ten (10) business days after the expiration of such 60-day period or after the date such Defect of Title is cured to Buyer's reasonable satisfaction (but in no event shall the Closing Date be earlier than is otherwise provided herein). Buyer shall have ten (10) business days after receipt of notification by Seller that the Defect of Title has been cured to advise Seller whether it is satisfied with the title defect cure. If such Defects of Title are not corrected or remedied within such 60-day period, then Buyer shall elect by written notice to the Seller on or before the Closing Date, as the same may be extended, either (i) to accept title to the Property subject to the uncured Defects of Title without reduction of the purchase price and without any right to damages and without any other liability on the part of Seller, or (ii) to terminate this Agreement, whereupon the Deposit shall be returned to Buyer and all obligations of the parties hereunder shall cease and neither party shall have any claim against the other by reason of this Agreement, except with respect to any provision hereof that expressly survives the termination of this Agreement. For purposes of this subsection (b), Seller may elect to cure or remedy any Defect of Title by providing Buyer with a binding commitment from a title insurance company licensed to do business in Maine committing to issue an endorsement to Buyer's owner's title insurance policy providing affirmative coverage for such Defect of Title at no additional premium to Buyer beyond any premium required for such title policy without such endorsement; and Buyer agrees to accept such affirmative coverage as a cure or remedy for such Defect of Title provided that the form and content of such affirmative coverage is satisfactory to Buyer and its advisors in their reasonable discretion; or the Seller may cure by other means satisfactory to the Buyer.

Any time taken to cure any defect in title shall extend by the same amount of time the Inspection Date described by section 4 of this Agreement.

(c) Seller represents and warrants to Buyer, effective as of the date of this Agreement and also effective as of the date of Closing, that: (i) Seller holds good and clear, record and marketable title to the Property in fee simple; (ii) there are no uncorrected violations of any laws or codes with respect to the Property, its condition, or use; (iii) no options, rights of first refusal, or other contracts have been granted or entered into which give any other party a right to purchase or acquire any interest in the Property or obligate the Seller in any respect; (iv) there are no leases, licenses, or other occupancy agreements in effect with respect to any part of the Property, other than a deed restriction preventing residential use and other uses as required which Seller shall seek to lift before Closing; (v) Seller has not received written notice of any planned or threatened condemnation or eminent domain proceedings with respect to the Property; (vi) the Property abuts a public way which imposes no access restrictions; (vii) this Agreement has been duly authorized by all requisite action and is not in contravention of any law or organizational documents and this Agreement has been duly executed by a duly authorized officer or official of Seller; (vii) Seller's execution of this Agreement does not violate any other contracts, agreements, or any other arrangements of any nature whatsoever that Seller has with third parties and (ix) the Seller shall seek to obtain, at its sole cost and expense, such environmental insurance as may be agreed upon by Seller and PanAm/Guilford, as a prior titleholder, that is sufficient to get PanAm/Guilford to lift the current deed restrictions on uses. Seller will not cause nor, to the best of Seller's ability, permit any action to be taken which would cause any of Seller's representations or warranties to be false as of Closing, and in any event shall notify Buyer of any change in these representations and warranties. Seller's representations and warranties shall survive the Closing and the delivery of the Deed.

Section 4. Inspection of Property. Buyer, and those parties controlled by Buyer or associated with Buyer, shall have the right to access the Property to inspect its condition, including, without limitation, making surveys, testing the geotechnical quality of soils and whether any Hazardous Materials exist (including sub-surface), and pursuing permits and approvals. Seller shall cooperate with Buyer, without material cost to Seller, in connection with all such inspections and actions by Buyer, including without limitation, by delivering to Buyer within ten (10) days of the effective date of this agreement, copies of any and all surveys, permits, title reports, hazardous waste reports, environmental assessments, geotechnical reports, samplings and investigations, all contracts and leases affecting the Property, any documents relating to the physical condition of the Property (including, without limitation, any improvements located thereon) and the status of the Property's compliance with applicable building code, zoning, land use and environmental laws, rules and regulations, feasibility studies (including financing), building and site plans, floor plans, property inspections, elevation studies, appraisals or other such pertinent information Seller has compiled related to the property and/or the proposed development that is in the Seller's possession or control, and signing any consents or authorizations for permit applications that may be required. If Buyer does not purchase the Property for any reason then Buyer shall promptly repair any damage that it may have caused.

The term "Inspection Date" means midnight on the sixtieth (60th) day following the Effective Date.

If Buyer is not satisfied with the condition of the Property for any reason, or no reason, in its sole discretion, then Buyer may terminate this Agreement by delivering written notice of such termination to Seller no later than five (5) days after the Inspection Date, in which event the Escrow Agent shall immediately return the Initial Deposit to Buyer. However, if Buyer does not so terminate this Agreement, then the parties shall proceed forward in this transaction. Upon Buyer's election to move forward, the Buyer shall deposit, within five (5) days, an additional Twenty Five Thousand Dollars ($25,000) in escrow with the Escrow Agent as Additional Earnest Money ("Additional Deposit"). Both the Deposit and the Additional Deposit shall be deemed non-refundable except in the event that the Seller fails to perform or the Buyer is unable to obtain the permits and approvals. The Deposit and the Additional Deposit shall be credited against the purchase price upon closing unless forfeited as otherwise provided in this Agreement.

Section 5. Covenants of the Seller. The Seller, through its consultant and others have undertaken a number of environmental studies which are referenced in Exhibit B to this agreement. The Maine Department of Environmental Protection (hereinafter "DEP") has issued one or more letter(s) confirming their approval of a Voluntary Response Action Program ("VRAP") Plan for the former rail yard property which is contained within lots 1, 2, 3, 5 and a portion of 6 (hereinafter "Railyard"). The VRAP includes a remediation plan approved on the Railyard property by the DEP. As part of the development plan for the Railyard property, Buyer shall be responsible for complying with the remediation plan for the property.

Buyer understands that lots 1, 2, 3, 5 and a portion of lot 6 are encumbered with deed restrictions, including but not limited to a restriction on residential uses on a portion of the Property. Pan Am/Guilford, a prior owner of the property has the sole discretion and is under no obligation to remove said deed restrictions. Provided that Pan Am/Guilford is in agreement with the insurance coverage provided by the Seller, the Seller will secure environmental liability insurance on the Railyard portion of the Property which will permit Pan Am/Guilford and the Seller to remove the deed restrictions on the property for residential and other uses, as required by Buyer.

The Seller has commenced review of the environmental conditions on the portion of the Property which is contained within a portion of Lot 6 and Lots 7 and 8 (hereinafter "Scrapyard"). The Seller will secure a VRAP for the Scrapyard (subject to Buyer's input and approval) and shall undertake remediation at its sole cost and expense in accordance with the VRAP. The Seller will work together with the Buyer to ensure the timely remediation in accordance with the Buyer's development plans. Buyer understands and agrees that no residential uses shall be approved on Lots 7 and 8 of the Scrapyard, even if such uses are allowed by the VRAP.

Section 6. Permit Period. Buyer shall have an additional One Hundred and Eighty (180) days following the Inspection Date (the "Permit Period") in which to obtain the permits and approvals that are necessary or desirable for Buyer's contemplated development of the Property for a mixed-use project including a parking garage as described in Section 11 of this Purchase Agreement. Buyer shall work with the City on the development of a master plan of all properties. Subject to the mutual agreement of the parties, the master plan may, but is not required to, include the elimination of the accessway from Somerset St to the Bayside Trail between Lots 6 and 7 or the 20ft wide accessway from Somerset St. to the Bayside Trail running through Lot 3, and the purchase of the underlying property in the accessway between Lots 6 and 7 by Buyer. It is the intent of the Buyer to build a mixed-use project which incorporates goals proposed by the City in its "A New Vision for Bayside", including, but not limited to, provide commercial and/or retail space on the first floor to allow for a user friendly neighborhood. If, by the end of the Permit Period, Buyer has not obtained all such permits and approvals, with all appeal periods with respect to such permits and approvals having expired with no appeal having been taken (or if taken, then with such appeal having been resolved to Buyer's satisfaction), then Buyer may terminate this Agreement by delivering written notice of such termination to Seller no later than five (5) business days after the end of the Permits Period, in which event the Deposit shall be returned to Buyer as provided in the Escrow Agreement. However, if Buyer does not so terminate this Agreement then the parties shall proceed forward in this transaction in accordance with the terms of this Agreement and the Deposit shall become non-refundable (except in the event of a Seller default, or because the Closing does not occur due to the failure of a condition precedent or as otherwise provided in this Agreement), but the Deposit shall always remain applicable to the Purchase Price unless otherwise provided by this Agreement.

During the Permit Period, as soon as practicable but no later than the same time as the Buyer presents its formal application for site plan approval, the Seller will present its plan for subdivision amendments to the Land consistent with the needs of the Buyer's site plan approval. The Seller shall be the applicant for the subdivision amendment, whether the review is done administratively or otherwise. Buyer shall provide, at its sole cost and expense, all required surveys in connection with the necessary subdivision amendments.

Notwithstanding anything in the foregoing to the contrary, Buyer shall have the right to extend the Permit Period up to three times, each extension for a period of thirty (30) days, by notifying Seller in writing of such extension within five (5) business days after the end of the then-current Permits Period, and depositing with Escrow Agent an additional deposit of Three Thousand Dollars ($3,000) per extension (the "Permit Extension Deposit"). The Permit Extension Deposit shall be considered part of the Deposit and shall non-refundable (except in the event of a Seller default, or because the Closing does not occur due the failure of a condition precedent or if Buyer/Seller is unable to obtain the permits and approvals or as otherwise provided in this Agreement), but the Deposit shall always remain applicable to the Purchase Price as provided herein. All references in this Agreement to the Permit Period shall mean the Permit Period as the same may be extended in accordance with the terms of this paragraph.

Section 7. Conditions Precedent to Closing. Seller and Buyer's obligation to Close hereunder are conditioned upon the satisfaction of the following conditions:

(a) there shall be no pending or threatened action, suit, litigation, hearing or administrative proceeding relating to Seller, any entity comprising Seller, or to all or any portion of the Property;
(b) the Property shall be free and clear of any leases, licenses, occupancy agreements, and any other parties in possession;
(c) Seller shall have delivered to Buyer such documentary and other evidence as the Buyer's title company may reasonably require evidencing Seller's authority, the absence of mechanic's liens and parties in possession, and any other matters that the title company may reasonable require;
(d) all of Seller's obligations under this Agreement shall have been performed and all its representations and warranties shall be true and correct;
(e) the condition of the Property (including without limitation the condition of the Property with respect to title and survey matters, as well as the presence of fixtures, equipment, and other personal property that is to be transferred at the Closing as elected by Buyer) shall be as required by this Agreement and no changes shall have occurred to such condition of the Property since the date of this Agreement (Buyer shall have the right to re-inspect the Property prior to the Closing to confirm the foregoing);
(e) notwithstanding anything in this Agreement to the contrary, Buyer shall have obtained any and all permits and approvals necessary or desirable for its contemplated development of the Property, with all appeal periods with respect to such permits and approvals having expired with no appeal having been taken (or if taken, then with such appeal having been resolved to Buyer's satisfaction);
(f) any hazardous materials on the property shall be handled in accordance with the requirements of the applicable VRAP agreement and this Agreement;
(g) Seller shall have paid, or will pay at or prior to Closing, all taxes, assessments, charges, fees, levies and impositions, coming due prior to the Closing Date;
(h) if any subdivision or other governmental approval is required in order to convey the Property as a separate parcel or lot then Seller shall have obtained all such subdivisions and/or other governmental approvals and shall have recorded any and all required plans in connection with the same;
(i) from and after the Effective Date, there shall have occurred no material adverse change to the Property (or any material portion thereof) which is continuing at the date and time scheduled for Closing which could have an adverse impact on Buyer's intended use of the Property; and
(k) Buyer shall have secured all permits, licenses and approvals (not subject to further action) necessary to construct its proposed mixed-use facility and parking garage on the Property.

Section 8. Closing. The Closing shall be held and completed at 10:00 A.M. or at such other time as may be agreeable to the parties at the office of the Buyer's lender's counsel in Portland, Maine, or through electronic communication or by mail by agreement of the parties, on the date that is thirty (30) days (or such shorter period of time as Buyer may elect upon five (5) days written notice to Seller) following the end of the Permit Period, time being of the essence. Notwithstanding the foregoing, in no event shall Buyer be obligated to close sooner than the fifth (5th) day following the satisfaction of the conditions precedent set forth in this Agreement. At the Closing, Seller shall cause the release of the Property from all loans and other monetary encumbrances secured by the Property, including, without limitation, municipal liens and utility fees of all kinds, and Seller shall pay all prepayment penalties or fees assessed by the holders of such loans and encumbrances, if any.

Seller is exempt from real estate transfer tax pursuant to 36 M.R.S.A. § 651. Seller shall pay the brokerage commission due to the brokers(s) described below, and all of its costs incurred.

Buyer shall pay its share of the real estate transfer tax and for all recording costs, Buyer shall be responsible for all of its own costs incurred, including, without limitation, the cost of studies or inspections desired by Buyer. The real estate taxes and other customary items of proration and adjustment shall be computed as of the date of Closing and added to or deducted from the net proceeds as the case may be. In the event accurate prorations or other adjustments cannot be made at Closing because of the lack of necessary information, the parties shall prorate and adjust based on the best available information, subject to prompt modification upon the receipt of the necessary information. At the Closing, Seller shall deliver to Buyer: (i) a Quitclaim Deed with covenant (ii) releases of any real estate liens or other instruments or agreements to be cancelled pursuant to the terms of this Agreement, in form appropriate for recording; (iii) an updated certification of the warranties and representations contained herein; (iv) an assignment of permits and warranties; (v) a Bill of Sale (if applicable), in form and substance satisfactory to Buyer, transferring to Buyer, without additional charge, all fixtures, equipment, and other personal property located at the Property (except for any fixtures, equipment and other personal property that Buyer has directed Seller in writing to remove on or before the date of the Closing, which Seller shall so remove, without causing damage to the Property); (vi) an assignment, transferring ownership of all the permits, plans and approvals which are part of the Property and (vii) such other documents required under the terms of this Agreement or customarily delivered at closings in the State of Maine. On or before Closing, Seller shall terminate any contracts relating to the Property that Buyer has not agreed to assume and shall pay all costs associated with such contracts. On or before Closing, Seller will do, make, execute and deliver all such additional and further acts, instruments and documents as may be consistent with this Agreement and customarily and reasonably required by Buyer and/or the Buyer's title company to complete the transactions described in this Agreement.

Section 9. Condemnation and Casualty. If, prior to Closing, all or any part of the Property or access to the Property shall become subject to condemnation through eminent domain by governmental or other lawful authority, or should be subject to damage or destruction by fire or other casualty, then Buyer shall have the option of either (a) completing the purchase, in which event all condemnation proceeds or claims thereof (or, in the event of a fire or other casualty, all casualty insurance proceeds, together with a credit against the Purchase Price for the amount of any insurance deductible) shall be assigned to Buyer, or (b) terminating this Agreement, in which event, notwithstanding any provision herein to the contrary, the Deposit shall be returned to the Buyer, and this Agreement shall have no further force or effect. Seller shall bear the risk of loss to the Property due to condemnation or casualty until the Closing and the recording of the Deed. Seller shall keep the Property insured at its presently insured levels from the date of this Agreement until the Closing and the recording of the Deed.

Section 10. Broker. At the Closing, Seller shall pay any and all fees or other commissions due and payable to CBRE| The Boulos Company (the "Broker"), pursuant to separate agreement. Except for the Broker, Seller and Buyer represent and warrant to each other that neither has dealt with any other real estate broker, agent, or salesperson. Seller agrees to defend, indemnify, and hold Buyer harmless from any claims, costs, judgments, or liabilities of any kind advanced by persons claiming real estate brokerage fees through Seller. Buyer agrees to defend, indemnify and hold Seller harmless from any claims, costs, judgments, or liabilities of any kind advanced by persons (other than the Broker) claiming real estate brokerage fees through Buyer. The indemnities set forth in this Section shall survive Closing.

Section 11. Conditions Which Survive Closing As a condition of this sales transaction, the Buyer will construct, at its expense, a parking garage on a portion of Lot 6 and all of Lots 7 and 8 which shall contain not fewer than 500 parking spaces. The Seller shall make a contribution to the cost of construction from the funds being provided to the Seller from the U.S. Department of Housing and Development (the "HUD Funds") in accordance with and to the extent allowed by federal law and regulations, including HUD's regulations. During the inspection period described in Section 4 above, the Seller and the Buyer shall enter into a formal agreement stipulating the terms of this contribution and the conditions of the contribution, which are expected to include the following:

1. The garage shall be open during reasonable hours 7 days per week subject to modification from time to time by buyer based on historical and projected volume of usage of the garage.

2. The garage shall have shared use with residents 7 days a week, 24 hours per day.

3. During snow bans, garage shall be available for snow ban parking and the overnight snow ban parking rate shall not exceed 50% of the then current daily maximum rate charged for parking at the garage.

4. The garage shall be made available for special event parking during off hours.

5. The garage shall provide turnover parking for the general public.

6. Rates shall be based upon market conditions.

7. The garage shall participate in the Park & Shop program.

8. The garage must accept both cash and credit card payments.

9. The garage must remain as a public parking facility for a minimum of 30 years.

The agreement referred to in this section shall further provide that Buyer shall comply with all the terms and conditions related to the use of HUD funds including, but not limited to, providing documentation of job creation. The Inspection Date shall be extended until the parties have reached agreement on these issues.

The agreement shall further provide that HUD has to approve the use of its funds for the garage and that if such approval is obtained, Buyer or any nominees, assigns or successors in interest shall be responsible for complying with any conditions required by HUD in addition to the conditions listed above and shall defend and indemnify Seller against any actions brought by HUD to enforce any HUD conditions and any sanction or fines resulting from an enforcement action.

In return for the use of HUD funds, the garage and any attached structures or units in it designed for non garage use shall comply with and be certified by the U.S. Green Building Counsel's (USGBC) Leadership in Energy and Environmental Design (LEED) Silver Standard, and shall achieve the minimum LEED optimize energy performance points necessary to meet the targets of the 2030 challenge as published by Architecture 2030, pursuant to the City of Portland's City Code, Section 6, Article VII.

Section 12. Default.

(a) <u>Buyer Default</u>. If Buyer defaults and fails to perform its obligations under this Agreement under this Agreement, Seller, at no cost, shall receive the Deposit and all interest thereon, as well as the results and reports of all development studies, testing reports, construction and design documents related to the garage, and surveys of the Property completed by the Buyer. The parties agree that the Deposit and development studies and surveys are a reasonable liquidated measure of Seller's damages and not a penalty and shall be Seller's sole and exclusive remedy at law and in equity because of the difficulty in ascertaining the exact amount of damages sustained by Seller.

(b) <u>Seller's Default</u>. If Seller defaults and fails to perform its obligations under this Agreement, then Buyer may, without limitation of its other rights and remedies, terminate this Agreement upon written notice to Seller, upon which event the Deposit and all interest thereon shall be immediately refunded to Buyer, and/or exercise all of its available remedies at law or in equity, including, but not limited to, the right to seek a judgment compelling the specific performance of this Agreement and/or an action for damages.

(c) Attorney Fees. In the event of litigation, the substantially prevailing party shall be entitled to receive its reasonable legal fees and court costs from the other party. This provision shall survive the Closing and delivery of the Deed.

Section 13. Miscellaneous. This Agreement (i) constitutes the entire agreement between the parties hereto with respect to the transaction contemplated herein and it supersedes all prior discussions, undertakings or agreements between the parties; (ii) shall not be modified except by a written agreement executed by both parties; (iii) shall be binding upon and inure to the benefit of the parties hereto, and their respective successors and assigns; (iv) may be executed in counterparts; and (v) may be executed by facsimile signatures. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of Maine. Any notice by either party to the other party shall be in writing and shall be deemed to have been duly given when either delivered personally, or mailed by certified mail, return receipt requested, or sent by nationally recognized overnight courier, or sent by facsimile, or sent by e-mail addressed to Seller, at Portland City Hall, 389 Congress Street, Portland, Me 04101, Attn: City Manager facsimile 207-874-8669, email: pfinnigan@portlandmaine.gov , with a copy to , the Director of Economic Development facsimile 207-756-8217, email: gmitchell@portlandmaine.gov, and another copy to Corporation Counsel, at the same address (facsimile 207-874-8497), email: gary@portlandmaine.gov; and to Buyer c/o The Federated Companies, 404 Washington Ave, Floor 8, Miami Beach, FL 33139, Attn: Jonathan Cox, facsimile (800) 523-5931, email: j_cox@federatedcompanies.com with a copy to Marc Shandler, Esq., The Federated Companies, 404 Washington Ave, Floor 8, Miami Beach, FL 33139, facsimile (800) 523-5931, email: m_shandler@federatedcompanies.com .

In the event any one or more of the provisions contained in this Agreement shall be for any reason held invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision of this Agreement, and this Agreement shall be construed as if such invalid, illegal or unenforceable provision had never been contained in this Agreement.

The term "Effective Date" as used in this Agreement shall mean the first date upon which both Buyer and Seller have executed a final counterpart of this Agreement and delivered the same to the other party.

The term “day” or “days” as it relates to a time or timeline for performance shall mean business days and shall not include weekends or state or federal holidays.

Buyer shall be entitled without Seller's consent to assign all of its right, title and interest in and to this Agreement to any primary lender or to any entity in which Buyer maintains a controlling interest. Buyer shall also be entitled with Seller’s consent, which shall not be unreasonably withheld, to assign all or part of its right, title and interest in and to this Agreement to any other entity. Buyer may also take title in the name of a nominee at the closing in which case the nominee shall be subject to all obligations of Buyer under this Agreement, and all rights of Seller. If the end of any time period herein, or if any specified date, falls on a weekend or state or federal holiday, then the end of such time period, or such date, as the case may be, shall be extended to the next business day thereafter. At the request of either party, Buyer and Seller agree to reasonably cooperate with the other and Escrow Agent in structuring and documenting the sale of the Property to effect a tax deferred exchange in accordance with the provisions of Section 1031 of the Internal Revenue Code and its corresponding regulations. Such cooperation shall be at no cost to the other party. In no event shall such cooperation require a delay of the Closing. The Section headings as used in this Agreement are for convenience or reference only and shall not be deemed to vary the content of this Agreement.

Section 14. Escrow Provisions. As an inducement to Escrow Agent to act as escrow agent, Buyer and Seller agree that: (a) Escrow Agent will hold the Deposit in an interest-bearing account at a banking institution with which Escrow Agent has an established banking relationship, and such interest shall follow the disposition of the Deposit in accordance with the terms of this Agreement; (b) the Escrow Agent shall disburse the Deposit (and the interest earned thereon) only in accordance with this Agreement; (c) Escrow Agent will not be liable for any error or judgment, or for any act or omission under this Agreement made in good faith, except for Escrow Agent's own gross negligence or willful misconduct; (d) Buyer and Seller will jointly and severally indemnify and hold harmless Escrow Agent from and against any claim, costs, damages, attorneys' fees, expenses, obligations, or charges made against Escrow Agent by reason of its action or failure to act in connection with any of the transactions contemplated by this Agreement, unless caused by Escrow Agent's gross negligence or willful misconduct; (e) Escrow Agent will have no liability for any claim, costs, damage, attorneys' fees, expenses, obligations, or charges resulting from a delay in the electronic wire transfer of funds, unless such matters arise as a result of Escrow Agent's gross negligence or willful misconduct; and (f) in the event Escrow Agent receives or becomes aware of conflicting instructions, demands, or claims with respect to this Agreement or the Deposit, Escrow Agent may file a suit in interpleader, and upon the filing of such suit in interpleader and placing of the Deposit with a court of competent jurisdiction, Escrow Agent shall be fully released and discharged from all further obligations imposed by this Agreement with respect to the Deposit.

Section 15. Right of Seller to Repurchase the Property. If construction activity is not commenced and diligently pursued on any or all lots within two years of the date of receipt by the Buyer of final site plan approval, the Seller shall have the right, but not the obligation, to repurchase said lots at Buyer's purchase price

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year set forth next to their respective signatures below.

[Signature page to follow]

PURCHASER:

The Federated Companies LLC

By: __________________________________
Jonathan Cox, Manager
Date of Execution: 6/23/11

SELLER:

City of Portland

By: __________________________________
Patricia A. Finnigan
Acting City Manager
Date of Execution: 6.16.2011

JOINDER OF ESCROW AGENT

Escrow Agent joins in the execution of this Agreement to acknowledge its agreement to act as escrow agent hereunder and to handle the Deposit in accordance with the terms and conditions set forth herein.

ESCROW AGENT:

____

By: __________________________________
Name: __________________________________
Title: __________________________________
Date: __________________________________

PURCHASER:

The Federated Companies LLC

By: ______________________
Jonathan Cox, Manager
Date of Execution: 6/23/11

SELLER:

City of Portland

By: Patricia A Finnigan
Patricia A. Finnigan
Acting City Manager
Date of Execution: 6·16·2011

JOINDER OF ESCROW AGENT

Escrow Agent joins in the execution of this Agreement to acknowledge its agreement to act as escrow agent hereunder and to handle the Deposit in accordance with the terms and conditions set forth herein.

ESCROW AGENT:

Monument Title Company

By: ______________________
Name: Karen L. Pelletier
Title: Managing Director/Exec VP
Date: July 1, 2011

EXHIBITS

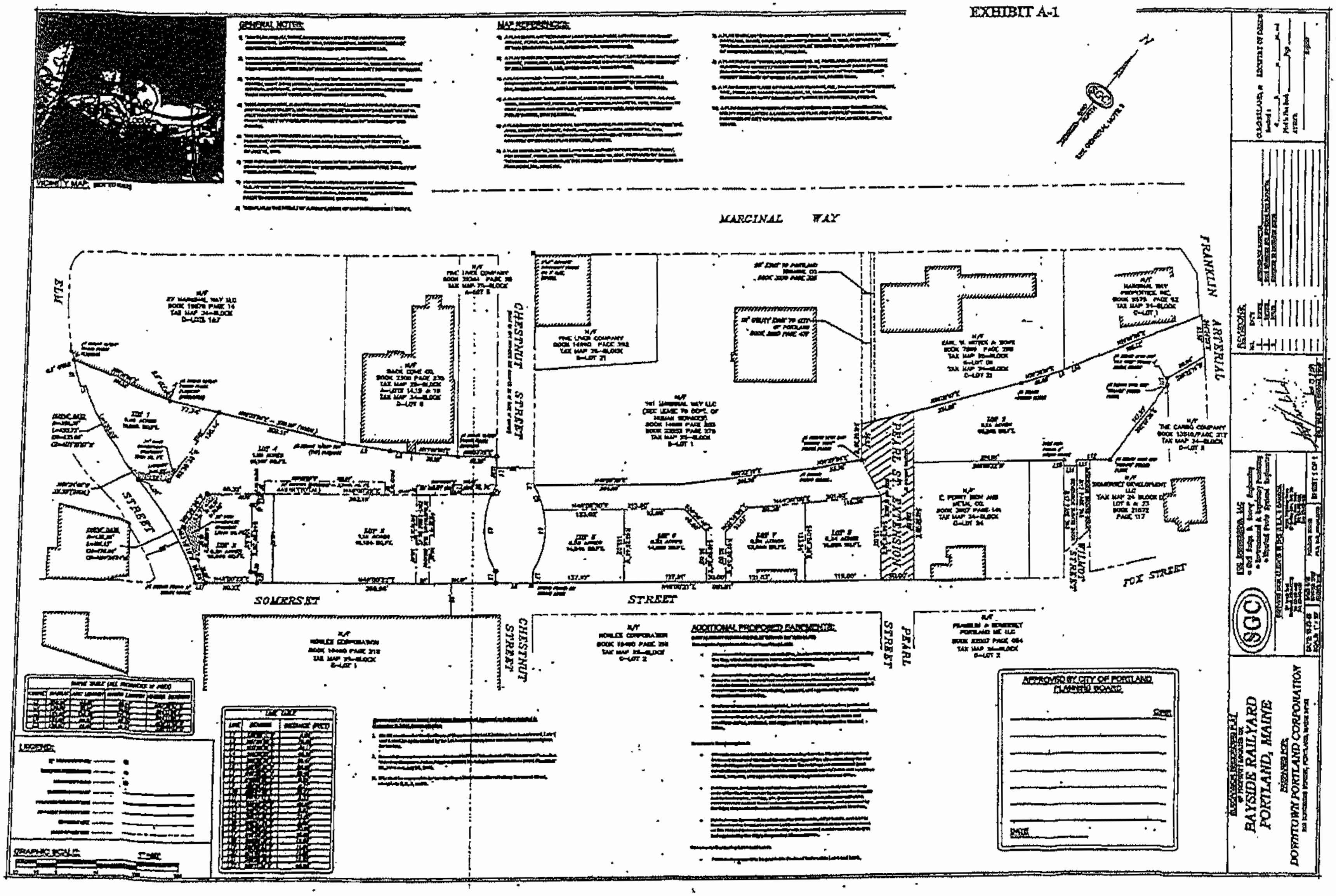
A - Description of Land
A-1 Proposed Somerset Street Subdivison plan, showing possible trail access
B – index of environmental studies

EXHIBIT A

Description of Land Being Purchased:

Lots 1,2, 3, 5, 6, 7 and 8 as shown on a subdivision plan entitled "Bayside Railyard Portland, Maine" prepared for the Downtown Portland Corporation by SGC Engineering, LLC as approved by the Portland Planning Board on December 9, 2008 and recorded in the Cumberland County Registry of Deeds on 1/27/09 in Book 209, Page 36.

EXHIBIT A-1



GENERAL NOTES:
MAP REFERENCES:
VICINITY MAP
MARGINAL WAY
FRANKLIN ARTERIAL
FOX STREET
WILMOT STREET
PEARL ST. EXTENSION
PEARL STREET
CHESTNUT STREET
SOMERSET STREET
ELM STREET
ADDITIONAL PROPOSED EASEMENTS:
APPROVED BY CITY OF PORTLAND PLANNING BOARD
DATE
LEGEND:
GRAPHIC SCALE:
LINE TABLE
CURVE TABLE
REVISIONS
SGC
BAYSIDE RAILYARD
PORTLAND, MAINE
PREPARED FOR
DOWNTOWN PORTLAND CORPORATION

Exhibit B

List of Bayside Rail Yard Related Environmental Reports

Site Assessment and Environmental Analysis: Phase I of the Portland Brownfields Project, Portland, Maine, Tewhey Associates, April 1999

Environmental Remediation Plan, Phase III of the Portland Brownfields Project, Portland, Maine, Tewhey Associates, Nov. 1998

Phase II Environmental Site Assessment, Union Branch Rail Line Property, Portland, Maine, Haley & Aldrich, Inc. Dec. 2000

Environmental Conditions at the Proposed DHS Building Land annex, Portland, Maine, Tewhey Associates, August 2003

Tewhey Associates Memo from J. Tewhey to M. Adelson of the City of Portland Re: Results of Testing of Excavated Soil at the Former Rail Yard Site in Bayside, Tewhey Associates, December 13, 2003

Subsurface Soil Observations and Testing at Northern End of Proposed Chestnut Street Extension, Tewhey Associates, Jan 2005

Phase I Environmental Site Assessment, Rail Yard Subdivision Lots 1,2,3,4 and 9 Somerset Street, Portland, Maine, Tewhey Associates, Dec. 2008

VRAP Completion Document, Bayside Trail Project, Former Union Branch Rail Line, Portland, Maine, Tewhey Associates, August 2010

Bayside Rail Yard DEP VRAP, July 2001

Bayside Rail yard DEP VRAP, November 2008

Chestnut Street Extension DEP VRAP, May 2005

DHS Annex Property DEP VRAP Certification, April 2004

Soil Remediation Consideration, Tewhey Associates, January 2002

Stockpiled Group 2 Soils at Brownfields Property Site, June 2005

NEMR Concrete Pad Sampling, September 2008

NEMR Phase I Environmental Site Assessment, February 2009

NEMR Phase II Soil Investigation, February 2007

NEMR Phase II Soil Investigation, July 2009

EXHIBIT "B"
TO FIRST AMENDMENT TO PURCHASE AND SALE AGREEMENT

[insert Environmental Studies]

Exhibit B

List of Bayside Rail Yard Related Environmental Reports

Site Assessment and Environmental Analysis: Phase I of the Portland Brownfields Project, Portland, Maine, Tewhey Associates, April 1999

Environmental Remediation Plan, Phase III of the Portland Brownfields Project, Portland, Maine, Tewhey Associates, Nov. 1998

Phase II Environmental Site Assessment, Union Branch Rail Line Property, Portland, Maine, Haley & Aldrich, Inc. Dec. 2000

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NEMR Phase II Soil Investigation, February 2007

NEMR Phase II Soil Investigation, July 2009

September 6, 2012 by LCW
O:\Bayside - Federated Companies\Purchase and Sale Agreement\2final FIRST AMENDMENT TO PURCHASE AGREEMENT for Execution.doc

Amended Exhibit ~~A~~ C to the Purchase and Sale Agreement

[2012]

Description of the Land Being Purchased

Lots 1, 2, 3, 5, 6, 7, 8 and a portion of Lot 9 as shown on a subdivision plan entitled "Bayside Railyard, Portland, Maine" prepared for Downtown Portland Corporation by SGC Engineering, LLC as approved by the Portland Planning Board on December 9, 2008, and recorded in the Cumberland County Registry of Deeds in on January 27, 2009, in Plan Book 209, Page 36; the portion of Lot 9 included is that portion which is within 120 feet of northwesterly sideline of Somerset Street.

EXHIBIT 3

[Parking Garage Agreement]

PARKING GARAGE CONTRIBUTION AND FUNDING AGREEMENT

This Parking Contribution and Funding Agreement (the "Parking Garage Agreement") is made this 15th day of October, 2012, by and between the **CITY OF PORTLAND, MAINE**, a body politic and corporate with a place of business at 389 Congress Street, Portland, Maine (hereinafter "City") and **LEGACY PARK APARTMENTS LLC**, a Florida limited liability company with a place of business at 801 Brickell Avenue, Suite 720, Miami, Florida 33131 (hereinafter "Legacy Park").

WHEREAS Legacy Park is the assignee, by virtue of an Assignment and Assumption Agreement effective June 27, 2011, ("Assignment"), of a Purchase and Sale Agreement between The City of Portland, Maine, ("City"), effective June 23, 2011, ("Agreement"), for the purchase of certain blighted and brownfield real property located on Somerset Street, Portland, Maine known as Lots 1, 2, 3, 5, 6, 7,8 and a portion of Lot 9,(collectively, "the Land"), consisting of approximately 3.25 acres formerly known as the "Bayside Railyard";

WHEREAS City, in order to create jobs and economic growth for the Citizens of Portland, Maine, has agreed to make a $9,007,000.00 contribution, ("City Grant Funds"), to Legacy Park from funds being provided to the City by the U.S. Department of Housing and Urban Development pursuant to the Bayside Redevelopment Project, Maine BEDI Grant and Section 108 Loan Program, ("HUD Funds"), toward the expense of the construction of a garage, with no fewer than 700 parking spaces and at least thirty thousand square feet of retail space on the first floor on a portion of Lot 5 and all of Lots 6 and 7 and a portion of Lot 9, ("Garage");

WHEREAS Section 11 of the Agreement requires City and Legacy Park to enter into a formal Parking Garage Agreement stipulating the terms and conditions of the contribution of the City Grant Funds to Legacy Park for the construction of the Garage.

NOW THEREFORE, in consideration of the foregoing and for good and valuable consideration the parties covenant and agree in this Parking Garage Agreement as follows:

1. Garage Construction. Subject to the terms and conditions of this Parking Garage Agreement and the City contributing City Grant Funds as described below, Legacy Park or its nominee shall construct the Garage in the location depicted on the plan attached hereto and incorporated herein by reference as Exhibit "A". The Garage shall have reached "Start-up Phase" as defined below within two (2) years after the date on which a total of $1,000,000.00 in City Grant Funds has been requisitioned by Legacy Park and disbursed by the City to Legacy Park. Notwithstanding the above, Legacy Park will diligently work to have constructed a sufficient percentage of the Garage so as to permit Legacy Park to requisition the City Grant Funds in full by November 31, 2014, so as to allow full disbursement of the City Grant Funds by December 31, 2014. If Legacy Park informs the City, in good faith, before October 1, 2014 that Legacy Park will not meet this requisition timetable, with evidence and reasons for this, the City will use its best

efforts to obtain an extension of this disbursement deadline for the HUD Funds from HUD, and if it obtains such an extension, it shall immediately transmit to Legacy Park evidence of this extension by HUD, and this timetable shall thereby be correspondingly changed, without further action of the parties hereto being required.

Legacy Park shall construct the Garage and any attached structures or units designed for non-garage use using sustainable and energy efficient construction methods, including, but not limited to, energy efficient lighting.

2. City Grant Funds. The City shall provide a grant to Legacy Park or its nominee of Nine Million Seven Thousand Dollars ($9,007,000.00) in City Grant Funds for use by Legacy Park for the City Grant Funds Uses as defined below. This funding is being provided in part as an incentive to build the Garage which would otherwise not be commercially viable. Accordingly, the City agrees that the first $9,007,000.00 of City Grant Funds Uses, disbursed in accordance with this Parking Garage Agreement, shall be City Grant Funds, but subject to and less the retainage described below. The City Grant Funds may be used for all purposes related to the Garage allowed with such HUD Funds, including but not limited to design, planning, permitting, environmental testing and remediation, and construction ("City Grant Funds Uses").

3. Legacy Park Contribution. Following the disbursement of City Grant Funds, less the retainage, Legacy Park shall provide sufficient additional funds for completion of the construction of the Garage, ("Legacy Park Contribution"). The Legacy Park Contribution shall either come from its own equity or financing from a construction lender. The Legacy Park Contribution, in addition to the City Grant Funds will cover the complete cost of constructing the Garage to completion.

4. Procedures for Making Disbursements (Payments). With respect to all requisitions for disbursements of the City Grant Funds, the City and Legacy Park agree as follows:

   (a) Legacy Park shall deliver to the City a written request for payment (a "Requisition") which shall be in substantially the same form as AIA Forms G702 and G703. The Requisition shall be accompanied by: (i) a summary of all expenses requested, (ii) copies of invoices, bills, receipts and such other information as may be reasonable to document the expenditures described in the Requisition, (iii) mechanics' lien affidavits and/or written lien waivers from such contractors, laborers, subcontractors and materialmen for work done and materials supplied which were paid for pursuant to the immediately preceding Requisition, and (iv) a certified payroll in conformance with the requirements of the Davis-Bacon Act of 1931, as amended, for all contractors and subcontractors on site and for which invoices are included.

(b) Requisitions shall be submitted by Legacy Park no more frequently than monthly. Prior to the disbursement by the City of any requested Requisition, City's construction inspector shall certify to City that the work for which a Requisition has been submitted has been completed and the City's Housing and Neighborhood Services staff will verify all workers are being paid the prevailing wage.

(c) A copy of the construction schedule will be submitted to the City at the beginning of the project. Updates will be provided by Legacy Park as necessary to remain accurate.

(d) City shall make disbursements to Legacy Park only after such certification and verification, and with a certified payroll, all the same must be correct and complete. Each Requisition for disbursement shall be submitted at least five (5) days before the date for which the disbursement is requested, and the City shall make such advancement no later than fifteen (15) days after receipt of each Requisition to make such disbursement. If the City fails to make any disbursement within fifteen (15) calendar days after such requisition with all required and correct and complete paperwork as delineated in this Parking Garage Agreement, such disbursement shall be paid with interest at a rate of one-quarter of one percent per month, from that date until the disbursement is in fact made ("Interest For Late Payment"). If any such Interest For Late Payment is owed then such amount shall be in addition to the City Grant Funds.

(e) City shall retain ten percent (10%) of the City Grant Funds as retainage, which shall be disbursed to Legacy Park upon receipt of the Certificate of Occupancy for the Garage or as mutually agreed upon between the City and Legacy Park.

5. Garage Operations.

(a) Key Card. The Garage shall be equipped with a "key card" system (or its equivalent) whereby weekly, monthly or longer term users shall have 24-hour access to the Garage 7 days a week, it being understood that certain users may only have access at certain hours based on contractual agreements with the owners of Garage. Legacy Park shall make the Garage available for public (hourly access) use during the "Start-Up Phase" at such times as established by Legacy Park during reasonable commercial business hours, which shall at a minimum be from 7 a.m. to 7 p.m., Monday through Saturday, and 10 a.m. to 7 p.m., Sundays and Holidays. The expression "Start-Up Phase" shall mean that period commencing when the Garage receives a Certificate of Occupancy allowing operation of the parking garage portion of the Garage facility and ending the date when the first other building (and not merely the retail portion within the parking garage structure) within the Project is issued a Certificate of Occupancy and that building starts using parking in the Garage. During and after the Start-Up Phase the Garage shall be open during reasonable hours, seven days per week, subject to modification from time to time by Legacy Park based on historical and projected volume of usage.

(b) Additional Requirements:

(i) Hourly and monthly rates for the Garage shall be based upon prevailing market rates, defined as follows: in no event shall rates be greater than 110% of the average market rates charged by City at City-owned and operated garages or the average of the three highest rates charged by garages within the City, excluding any garages that may be owned by Legacy Park or any of its affiliates;

(ii) The Garage shall participate in the Park and Shop Program;

(iii) The Garage shall be available for City snow ban parking, and the overnight (i.e. 5:00 p.m. to 8:00 a.m.) snow ban parking rate per hour shall not exceed three times the then-current maximum hourly rate charged by the Garage;

(iv) Upon written request of the City in each such instance, the Garage shall be available at customary rates for parking for special events held on the Portland Peninsula after 5:30 pm on weekdays and if requested, at requested reasonable times on weekends.

(v) The Garage shall have shared use with the public 7 days a week, 24 hours per day.

(vi) The Garage shall provide a minimum of 200 hourly turnover parking to the general public, and will provide within 2 days upon request data and information, including the number of non-turnover parkers present in the Garage at any given time, in order for the City to verify compliance with this condition.

(vii) The Garage will accept both cash and credit card payments.

(viii) The Garage will be maintained so long as it is a public parking facility, in accordance with the then current edition of the National Parking Association's "Parking Garage Maintenance Manual (now in its Fourth Edition) , and in particular in accordance with the Recommended Maintenance Checklist contained therein.

(c) The Garage will remain a public parking facility for a minimum of thirty (30) years.

These requirements (a) through (c) shall be a covenant contained in the deed to Lots 6 and 7and the covenant shall run with the Land for the stated thirty (30) year period from the date of conveyance of Lots 6 and 7 from the City to Legacy Park and thereafter shall automatically expire.

7. Payments in Lieu of Taxes. In consideration of the City Grant Funds paid to Legacy Park by the City, Legacy Park agrees, for itself and its successors, assigns and lessees for a period of thirty (30) years starting on the closing date of the purchase of the Land, that in the event that any portion of the Land is ever exempt from real or personal property tax, then a yearly payment by the then owner of the exempt portion shall be made in lieu of taxes equivalent to the property taxes that would otherwise be paid on the exempt portion of the real and personal property situated on the property. This requirement shall be a covenant contained in the deed to the Land and the covenant shall run with the land for the stated thirty (30) year period.

8. Compliance with HUD requirements.

(a) Job Creation. HUD regulations require that the City, as the original grantee of the HUD Funds, document all jobs created through the use of HUD Funds disbursed to Legacy Park as City Grant Funds. Legacy Park recognizes that one of the primary goals of City's contribution of the City Grant Funds is the creation of jobs, and Legacy Park agrees to create the required number of jobs necessary for the City's use of the HUD Funds and to provide City with timely and complete documentation of all jobs created or caused to be created as a result of receiving the City Grant Funds, and requirements related to job creation shall be contained in a Job Creation Agreement to be entered into between the parties.

(b) Section 108 Compliance. Legacy Park, its employees, assigns, agents and subcontractors for this project, at all times shall comply with the requirements of the Section 108 Loan Guarantee and Brownfields Economic Development Initiative Grant program and Federal Labor Standards pursuant to Davis Bacon and related Acts, specifically including:

A. Davis-Bacon Act, as amended.(40 U.S.C 276a - 276a-5.) All laborers and mechanics employed by contractors or subcontractors, including employees of other governments, on construction work assisted under this contract, and subject to the provisions of the federal acts and regulations listed in this paragraph, shall be paid wages at rates not less than those prevailing on similar construction in the locality as determined by the Secretary of Labor in accordance with the Davis-Bacon Act.

B. Contract Work Hours and Safely Standards Act, as amended. (40 U.S.C. 327-333). All laborers and mechanics employed by contractors or subcontractors shall receive overtime compensation in accordance with and subject to the provisions of the Contract Work Hours and Safety Standards Act, and the contractors and subcontractors shall comply with all regulations issued pursuant to these acts and with other applicable Federal laws and regulations pertaining to labor standards.

C. Copeland Anti-Kickback Act, as amended. (18 U.S.C. 874 and 40 U.S.C. 276c). This Act requires that workers be paid at least once a week, and without any deductions or rebates except permissible deductions.

9. Default. In the event that Legacy Park is in default of a material provision on any of the obligations contained in this Parking Garage Agreement, and Legacy Park fails to cure said default within ninety (90) days of receipt of written notice issued by the City, then Legacy Park shall, if requested to do so by the City, convey to the City the Garage and the related real property, on these terms and conditions:

- This conveyance to the City shall be without the requirement of further legal action by the City.
- The cost to the City for this purchase will, in concept, be the sum of the cost of construction of the Garage and all related improvements associated with the Garage, plus the cost to the cost to Legacy Park for the related land upon which the Garage sits (the "Garage Land"), less the amount of the City Grant Funds actually disbursed up to the time of this purchase.
- The City acknowledges that Legacy Park will most likely use the Garage and the Garage Land as collateral for a construction loan for the purpose of finishing the construction of the Garage and other costs and improvements related to the project. The City therefore agrees to work on documents at the time of such financing, with Legacy Park and its construction lender, to make it possible for the City to have the remedy described above in concept, and to also permit such construction financing.

The City agrees that Legacy Park's obligations under this Parking Garage Agreement are "non-recourse" and that any recovery by the City shall be limited to the Garage. None of Legacy Park, its officers, members, employees, attorneys, agents or affiliates (collectively, "Legacy Park Persons") shall be personally liable for the performance of this Parking Garage Agreement, and the City shall not commence or prosecute any action against any Legacy Park Person, for payment or performance of any obligations under this Parking Garage Agreement. The City shall not seek, obtain, or enforce a deficiency judgment against any Legacy Park Person. Notwithstanding this provision, the rights and obligations under the Agreement between the parties and the Corporate Guaranty Agreement of near or even date are cumulative and in addition to the rights described herein.

In the event of an alleged default by the City, Legacy Park, at its sole election, shall have the right to seek specific performance and any and all other relief to be provided by a Court, at law or in equity, including, but not limited to, common law writs. City expressly consents to the jurisdiction of the Maine Courts in the event of an alleged City breach under this Parking Garage Agreement.

10. Assignment. Legacy Park shall be entitled, without the City's consent, to assign all of its right, title, interest and obligations in and to this Parking Garage Agreement to any lender or to any entity in which Legacy Park maintains a majority interest and management control. The City must be notified within thirty (30) days or Legacy Park will be in default of this Parking Garage Agreement as described in Section 9 of this Agreement.

11. Termination. In the event that the Parking Garage Agreement is terminated on account of Legacy Park's default, the obligation of the City to provide the City Grant Funds described herein is terminated.

12. Miscellaneous Provisions. In the event of litigation, the prevailing party shall be entitled to receive its reasonable legal fees and court costs from the other party. This provision shall survive the Closing and delivery of the Deed pursuant to the Agreement.

13. Entire Agreement. This Parking Garage Agreement (i) constitutes the entire agreement between the parties hereto with respect to the construction and operation of the Garage and it supersedes all prior discussions, undertakings or agreements between the parties in respect to the Garage; (ii) shall not be modified except by a written agreement executed by both parties; (iii) shall be binding upon and inure to the benefit of the parties hereto, and their respective successors and assigns; (iv) may be executed in counterparts; and (v) may be executed by facsimile signatures. This Parking Garage Agreement shall not confer any rights or remedies upon any third-party other than the parties to this Parking Garage Agreement and their respective successors and permitted assigns.

14. Notices. Any notice by either party to the other party shall be in writing and shall be deemed to have been duly given when either delivered personally, or mailed by certified mail, return receipt requested, or sent by nationally recognized overnight courier, or sent by facsimile, or sent by e-mail addressed to the City at Portland City Hall, 389 Congress Street, Portland, Maine 04101, Attn: City Manager facsimile 207-874-8669, email: MHR@portlandmaine.gov, with a copy to, the Director of Economic Development, facsimile 207-756-8217, email: gmitchell@portlandmaine.gov, and another copy to Corporation Counsel, at the same address, facsimile 207-874-8497), email: gary@portlandmaine.gov , and to Buyer c/o The Federated Companies, 801 Brickell Avenue, Suite 720, Miami, Florida 33131, Attn: Jonathan Cox, facsimile (800) 523-5931, email: j_cox@federatedcompanies.com

15. Severability. In the event any one or more of the provisions contained in this Parking Garage Agreement shall be for any reason held invalid, illegal or unenforceable in any

respect, such invalidity, illegality or unenforceability shall not affect any other provision of this Parking Garage Agreement, and this Parking Garage Agreement shall be construed as if such invalid, illegal or unenforceable provision had never been contained in this Parking Garage Agreement.

In Witness Whereof, the parties have hereunto executed this Parking Garage Agreement as of the day and year set forth next to their respective signatures below.

LEGACY PARK APARTMENTS LLC

By: Jonathan Cox
Its: Member
Date of Execution: 10/15/12

CITY OF PORTLAND

Mark W. Rees
By: Mark Rees
Its: City Manager
Date of Execution: 10-15-12

Approved: Ellen Sanborn, Finance Director

Approved as to Form: Corp. Counsel

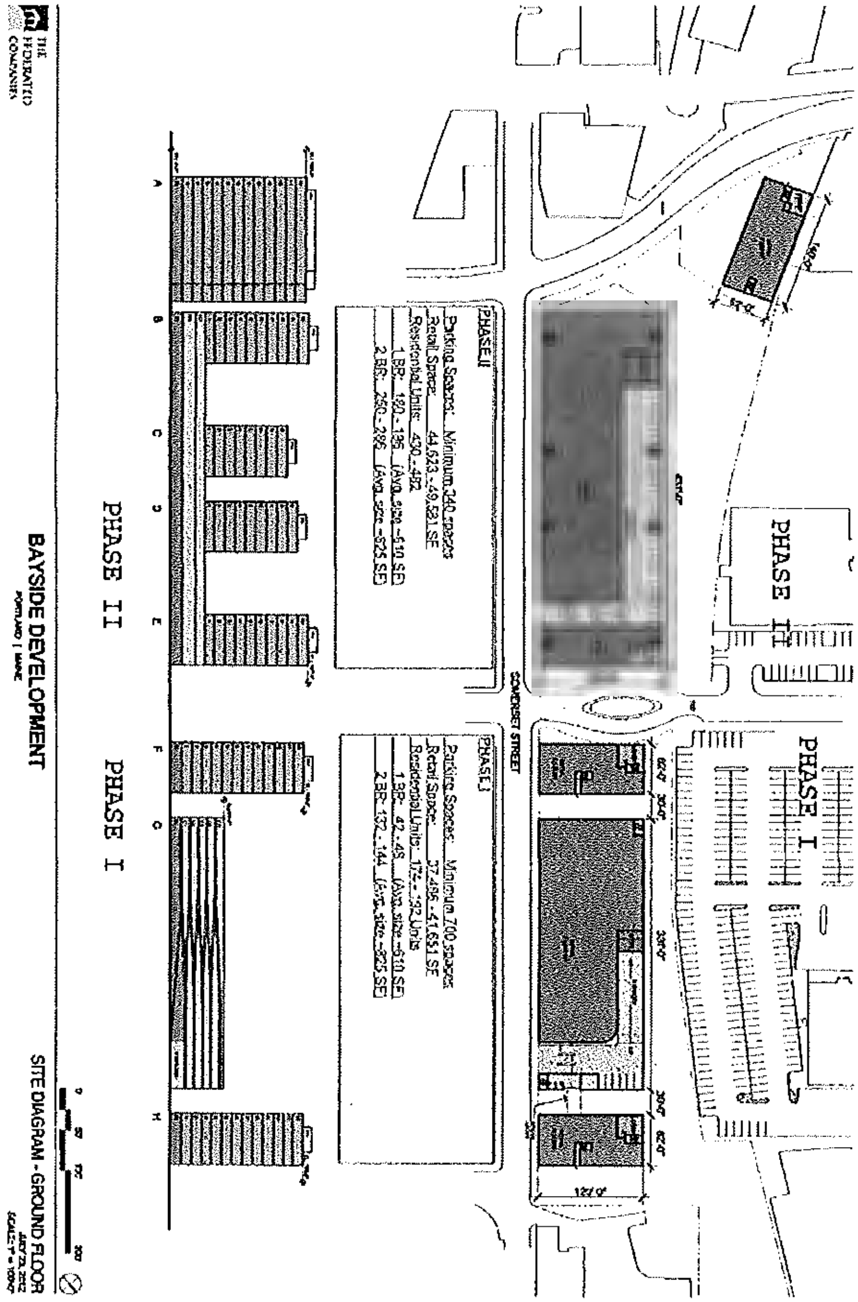
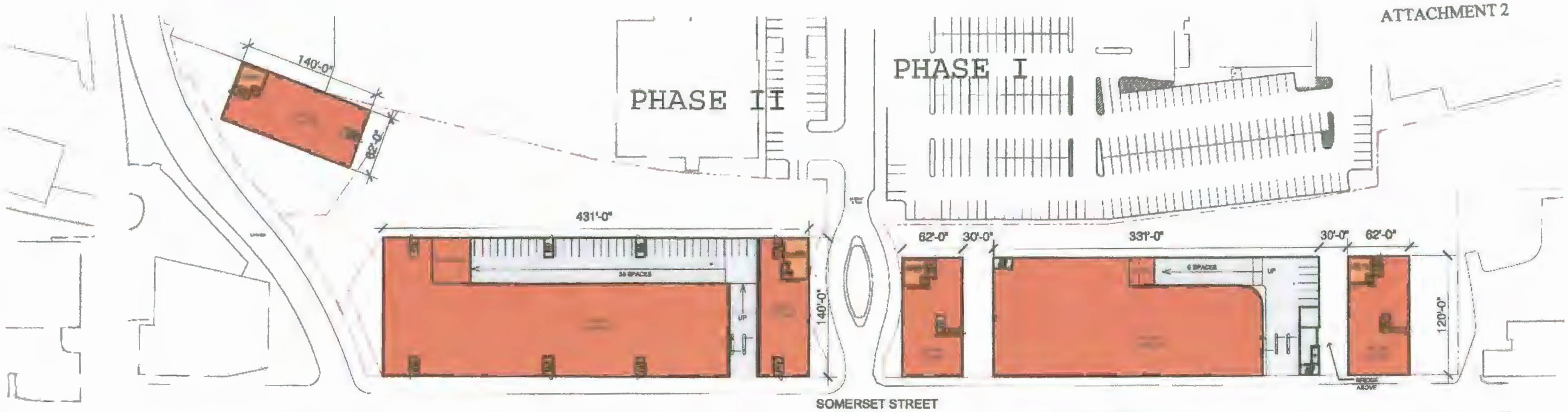

THE FEDERATED COMPANIES
BAYSIDE DEVELOPMENT
PORTLAND | MAINE
PHASE II
PHASE I
A
B
C
D
E
F
G
H
PHASE II
Parking Spaces: Minimum 340 spaces
Retail Space: 44,623 - 49,521 SF
Residential Units: 430 - 482
1 BR: 180 - 196 (Avg size ~610 SF)
2 BR: 250 - 286 (Avg size ~825 SF)
PHASE I
Parking Spaces: Minimum 700 spaces
Retail Space: 37,486 - 41,651 SF
Residential Units: 174 - 192 Units
1 BR: 42 - 48 (Avg size ~610 SF)
2 BR: 132 - 144 (Avg size ~825 SF)
SOMERSET STREET
PHASE II
PHASE I
127'-0"
SITE DIAGRAM - GROUND FLOOR
0 50 100 200

Exhibit A

EXHIBIT 4 (part 1 of 3)

[Phase I Site Plan]

ATTACHMENT 2

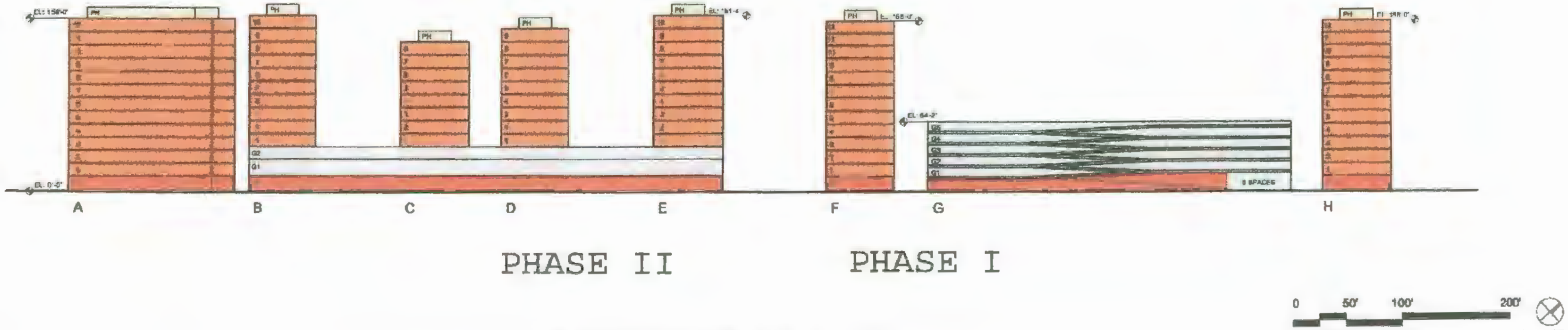


PHASE II

Parking Spaces: Minimum 340 spaces
Retail Space: 44,623 - 49,581 SF
Residential Units: 430 - 482
1 BR: 180 - 196 (Avg. size ~610 SF)
2 BR: 250 - 286 (Avg. size ~825 SF)

PHASE I

Parking Spaces: Minimum 700 spaces
Retail Space: 37,486 - 41,651 SF
Residential Units: 174 - 192 Units
1 BR: 42 - 48 (Avg. size ~610 SF)
2 BR: 132 - 144 (Avg. size ~825 SF)



THE FEDERATED COMPANIES

BAYSIDE DEVELOPMENT

PORTLAND | MAINE

SITE DIAGRAM - GROUND FLOOR
JULY 23, 2012
SCALE: 1" = 100'-0"

EXHIBIT 4 (part 2 of 3)

[Phase I Design Guidelines]

1. Introduction

The emphasis of the Guidelines is on the public spaces. The goal of the Guidelines is to provide high quality, attractive and active spaces that employ contemporary techniques but connect to the unique history of the site and Portland, ME as a whole. To this end, the Guidelines are focused on the impact of buildings on the public environment. These Guidelines seek to create spaces, not projects. The goal is to create an ever□changing, lively atmosphere with visual appeal throughout (this is not a traditional business or residential district). The focus is on the pedestrian □ to provide a human scale, good way finding, and a comfortable walking environment. The Guidelines are also intended to create visual interest from near and far. Up close, ground level design standards produce comfortable, inviting, and stimulating environments. From afar, a variable skyline of roof edges, vertical shafts, and signage create interest.

2. Use

2.1 Active Ground Floor Uses

Active uses that engage pedestrians shall be located along all street frontages. Ground level land uses shall be established and designed to animate public sidewalks, the wharf and alleys/mews to provide visual appeal. In required active ground floor areas, the following uses are acceptable:

- Commercial uses, such as retail stores, retail service establishments, food and beverage establishments; and/or entertainment facilities, and
- Lobbies for above grade uses such as office, residential, and hotel with an emphasis on high quality design, visual transparency, and where possible, uses that engage the street.

3. Massing

The Guidelines describe the overarching design principles for all future construction in the Project Area. The Guidelines define the intended quality, characteristics and coherence of the urban elements, which regulate how the site shall be used for civic and commercial purposes. The Guidelines define building mass, street wall heights, and façade articulation necessary to create a lively urban waterfront environment.

Building setbacks above the lower levels should be employed to help limit the perceived mass of the structure and to insure that buildings maintain a human scale and a consistent street wall throughout. Setbacks for upper stories may vary in accordance with the Master Development Plan.

The buildings will have three basic components: base; middle; and top. The base will be designed in a scale and articulation that is related directly to the pedestrian. The middle portion of the building will provide scale to the buildings both horizontally and vertically. And finally, the top will be designed in a manner to provide unique articulation that visually terminates the top of the building.

3.1 Build□to□Lines

Street walls on public rights□of□way are encouraged to vary in height and express distinguishable facade types to evoke multiple buildings/uses. A minimum of 75% of the lineal length of the mandatory building frontage shall be set at the parcel boundary line or within 10 feet there from. The first two stories of a building are required to be set at this mandatory front parcel line. Variation in street wall facades is encouraged along upper levels and roof lines. In areas where active ground floor uses are required, building entrances should be located at least every 75 feet (preferably every 30□35 feet).

The character and scale of facades forming the street wall may involve the combined use of traditional and innovative materials to express a transition from a historical□era to a more modern□era design vernacular. The character, height and massing of street walls should include:

- Commercial uses, such as retail stores, retail service establishments, food and beverage establishments; and/or entertainment facilities, and
- Define a continuous street and highly articulated building by building wall mass along all build□to lines (i.e., zero front yard setbacks along public rights of way)
- Encourage projections, canopies, signage, lighting, and variation of building size
- Discourage projecting balconies
- Encourage balconies recessed within or integral with the façade wall where balconies are proposed.
- Encourage articulation of the façade that could include changing design treatment and/or materials to reduce the apparent mass of long building facades.

Encroachments on the sidewalk will be designed to encourage pedestrian activity and will be human scale. The encroachment will not impede the visual.

4.0 Circulation & Service.

Streetscapes in the Project Area are meant to be pedestrian friendly environments, featuring a consistent pallet of signage, lighting, paving, and furniture. Streets should be well lit, active, human scaled, and feel safe day and night.

The City's streetscape standards will be used for public sidewalks, streetlights, street furniture, fencing and walls, landscaping and signage in order to create a unified image of the neighborhood.

Street lighting shall comply with the *Technical and Design Standards and Guidelines*.

4.1 Parking

The provision of off□street parking within the Project Area will be as set forth in the approved planned unit development.

Parking structures will be designed to be compatible and integral to adjacent architecture in form, bulk, massing, articulation, and materials; incorporating design elements that provide visual interest on all sides visible from public rights of way.

Parking structures will be designed above grade and in a way to provide natural ventilation.

The entrance to parking structures will minimize impact on the pedestrian realm and be designed to maximize driver and pedestrian safety.

4.2 Refuse Collection

Refuse collection areas and dumpster locations shall be fully enclosed within portions of principal buildings for which they proposed to serve and shall be screened from view so as not to affect other views from around the site.

5. Architectural Features

Design references to Portland's are encouraged. The design of new buildings and structures should be timeless and enduring, seeking inspiration from the rich industrial and architectural precedents of Portland's downtown and waterfront and should seek to uphold its strong history.

5.1 Edges

Special care and design attention along with more decorative treatment and materials are desired for all edges of buildings. These are the most visible part of the urban scene. Edges include roof lines, canopies, cornices, and more prominent window openings and entrances.

5.2 Bases

Buildings should be articulated to respond to individual users. The diversity of storefront articulation will break down the scale of the overall project and street wall. The first level of buildings should be articulated by material change to express a building base and use other elements such as color, design detail, smaller scale, and higher quality materials to provide visual interest. Building ground floor bases, typically 25□40', should emphasize the ground floor activity and provide the highest quality of pedestrian environment.

5.3 Storefront and Retail Facades

See Article 9.

5.4 Corners

Corners are particularly visible and are suggested to be made more noticeable. Changes in orientation, shapes, additional materials, colors, and projections are all favored means of adding special visual appeal to interesting streets, wharf, and public spaces.

5.5 Cornices

A crowning projection, or cornice, shall be encouraged at the top of a building along the street wall (top of the building for those under 60', and at the setback for those over). These elements can be very modest in detail.

5.6 Appurtenances

Canopies, awnings, and marquees are permitted and encouraged as they provide weather protection and provide visual interest and delight to the streetscape environment. These elements are to be decorative and light weight. Variety and non□repetitive design are desired. Canopies can be constructed of a variety of materials including both fabric and metal. Fabric awnings can be retractable.

Lettering and logos are permitted on the valence flap of the awning but lettering is generally discouraged on the main body of the awning. It is desirable for these projecting elements to incorporate outdoor heating systems to lengthen the comfortable use of outdoor spaces.

Backlit awnings and canopies are expressly prohibited. Awnings and canopies may be lit from the exterior.

5.7 Skyline

A goal for the project is to create a varied and highly decorative skyline as seen from afar. The varied rooflines can be achieved by changing heights, also by varying roof types, roof angles, and the addition of vertical elements to contrast with the roofs.

Rooftop terrace structures shall not be enclosed and are not considered an additional building level. Rooftop terraces are encouraged to take advantage of views.

All exposed mechanical equipment and bulkheads shall be mounted on roofs. Equipment should be integrated into the roof design and screened in a method that is integral to the architectural design of the building and adds visual interest to the skyline. All venting of HVAC equipment shall occur on the interior of development parcels. All venting runs for cooking fans shall be fully enclosed and incorporated into the interior of proposed buildings and vented though the highest roof of the building podium.

5.8 Back Sides of Buildings.

The back sides of buildings will be designed with high quality facade materials, transparent windows, operable building entrances, and other design features consistent with the primary facades of the building. Utility meters, exhaust vents, fire escapes etc. will be designed in a manner to be unobtrusive.

6. Materials

6.1 Building Materials and Color

Use of innovative building technologies is encouraged throughout the project and should be contrasted with traditional building materials that reference Portland's history.

Recent innovations in building materials can showcase advancements in environmentally conscious design and provide a sense of excitement for project visitors.

New buildings shall be constructed with materials common throughout the Portland's downtown and waterfront rich architectural history. Use of materials such as brick, stone, steel and wood is required for the first 40 vertical feet of a building's base, especially on pedestrian□oriented street wall facades. The use of these high□quality materials is intended to convey a solid, lasting look. Buildings should employ industrial materials as a way of visually and conceptually evoking the industrial/working heritage of Portland's downtown and waterfront. These include timber, forged and cast metals as well as rough hewn stone and metal cables.

The use of cement fiber shingles, imitation stone, imitation brick, stucco or exterior insulation finish systems will be considered on any building façade above the first 40 vertical feet of the buildings.

Facade coloration shall be achieved by use of the inherent color of building materials rather than the application of color to the surface of materials. Paint should be reserved for trims and accents on metal, wood, cornices, frames and the like. Use of material's inherent color sets a standard of authenticity associated with industrial structures. Examples of this type of façade coloration desired are a variety of earth tones achieved through the use of unglazed brick, wood, concrete and steel.

Masonry facades shall include the use of stone as architectural accents for lintels, sills, copings and keystones. Foundation bases, sills and lintels shall to the greatest extent possible use local (within 500 mile radius) stone or limestone. Masonry finishes are encouraged to be natural rather than highly finished or polished.

6.2 Glass and Fenestration

The base of buildings should feature the use of glass for the first story to emphasize the importance of the ground level active use (only one level of active use is required). Glazing and openings shall promote a flexibility of ground floor uses and the potential for change over time. Proportion of glazing to overall wall area shall be a minimum of 75% on ground level street wall frontages facing public rights□of□way. The first floor windows and storefronts will be transparent with active uses visible behind them. Opaque glass shall not be used at the first floor level. Window openings shall express sills and headers of metal or stone. Storefronts should be integrated into the design and materials of the entire building. The storefront's bulkhead/knee wall should be constructed of a durable and evocative material. Transoms are encouraged for larger window units. In all building facades windows are encouraged to be set back from the wall surface a minimum of six inches from the surface of masonry to the glazing. Tinted or reflective glass will not be utilized.

Window proportions, groupings and rhythms shall be integral elements of the design of each building facade and urban street□wall. Punched windows are desired above the 2nd floor. Curtain walls are discouraged unless used to define a vertical corner or other discreet architectural emphasis. Glazing systems shall be designed to promote area□wide visibility, accessibility and safety during evening hours and during the winter season. Well designed fenestration patterns that evoke historic fenestration are preferred over attempts to replicate historic patterns.

7. Signage

Signage lighting should come from direct shielded light sources and be carefully integrated into the overall design of the building so as to provide visibility and safety but avoid creating glare or light distribution that adversely affects motorists or pedestrians. Backlit signage is generally discouraged.

Neon signs may be allowed so long as they are carefully designed in size, shape and color that complement the architecture of the building and the district.

8. Lighting

The vision for Bayside seeks a maximum amount of light that creates a variety of environments and experiences. Lighting should be used for artistic purposes and carefully integrated with the architecture and buildings, such as to accent edges.

The commercial buildings are intended to be inviting to the public, to encourage visitors to enter the site from the city streets, to shop at the retail stores and eat at the restaurants, and to generally stay longer and take full advantage of the waterfront area. Balanced against an appropriate level of street illumination, there is a need to limit light that is cast up and into upper floors of buildings or the atmosphere. Lighting fixtures should be scaled to the pedestrian and have a distinctive industrial character. Architectural accent lighting should highlight corners and roof edges.

Storefront lighting is one of the best sources of sidewalk lighting in urban areas. It is warm and welcoming, and contributes to a sense of activity and watchfulness. It also generally provides a greater amount of light directly onto the sidewalk than do street□level luminaries. Retail storefronts are an effective way to provide lighting from the buildings.

The first four feet inside any retail or restaurant establishment shall have decorative lighting, preferably with visible point sources. Occupancies on the first floor that do not have active, bright window displays shall be designed to provide visual articulation from lighting at no greater than 25 feet intervals. This can be accomplished in a variety of ways, such as:

- Decorative luminaries mounted to walls, posts, brackets, etc.
- Lighting surfaces, textures and objects such as pilasters, wall features, banners, sculptures, graphics, etc.
- Internally lighted glowing architectural or graphic elements such as glass block, display cases, signage panels, canopies, transparencies, etc.
- Lighting at entryways (especially if they are recessed).
- Lighting property addresses.

9. Retail

9.1 Retail Storefront Requirements

All buildings with retail on the first floor shall incorporate a traditional storefront design with a large display window or windows of clear glass, bulkheads, recessed entries (where appropriate), transom windows, and suitable locations for signs at their ground levels. Blank walls should be minimized and static displays (including photographs) will discouraged in display windows. Modern and creative design solutions may be employed as long as the traditional storefront proportions are referenced. Multiple storefronts within the same building should be visually compatible in terms of scale, alignment, color and materials. The intent is to encourage creativity by individual retailers to add to the character and place making of Bayside.

9.1.1 Storefront Character

Storefronts should be individual expressions of a tenant's identity; however, tenants will be discouraged from using national brand standard storefronts and/or representations of their identity in an effort to create a retail environment that is uniquely Bayside Storefronts should be integral to the building design but should also provide a distinct retail identity at the ground level.

9.1.2 Storefront Entries and Doors

Door placement and design are an integral part of each storefront, as they are the prevalent method of entry into each space. Placement and design should provide a direct "connection" to the sidewalks and streets. Restaurants tenants are encouraged to provide a clear thru□way and a visual connection to exterior seating areas, if any.

9.1.3 Storefront Materials

The design, fit, and finish of all components for each storefront should be of the highest quality. Additional focus should be on window design to create a visual connection between the interior and exterior. Durable materials should be utilized for storefront construction as these are especially critical at street level where pedestrian contact will be considerable. Storefronts should be pre□dominantly glass to provide views into the store, but glass should not be the exclusive material.

9.1.4 Storefront Lighting

Night lighting of retail will help animate Bayside, prolong street life after business hours, and increase pedestrian safety. Storefront facades, recessed doorways, outdoor spaces and passageways should be well lit. Sign lighting, including flat□mounted signs, blade and banner signs, must be lit with concealed lighting or from above with down□lighting. Fixtures should be located and angled to ensure that they spotlight the tenant's merchandise and do not point toward the window or cause distracting reflections. Include "after hour" lighting within the front of stores to contribute to pedestrian lighting and provide for a comfortable night time strolling experience.

9.1.5 Storefront Canopies and Awnings

Design and placement should complement the scale of the store facade design. Collective placement of canopies and/or awnings along a street should maintain overall design integrity and avoid a uniform layout providing weather protection at a minimum of 20 feet at all storefront and building entrances. Canopies shall be constructed of permanent, durable materials, with glass and steel preferred. Awning material should be of a woven fabric or other material that projects the natural appearance of canvas, metal, glass, etc. Retractable or open side awnings are acceptable. Vinyl awnings and internally lit awnings are not allowed.

9.1.6 Storefront Signage

Creativity in signage design is encouraged and adds to the ground level experience at Bayside. Non□descript box signs are discouraged.

10. Sustainability

The project will be designed in accordance with the energy standards of the building codes and using new sustainability construction practices.

EXHIBIT 4 (part 3 of 3)
[Phase I Specifications Sheet]

Standard Features

EXTERIOR FEATURES
- Pile / Grade Beam Foundation Construction
- Parapet roof design
- Multi-ply Insulated Roofing Membrane system
- Parking Garage access
- Direct access to ground floor retail
- Connecting walkways to Bayside trail
- Multi material exterior facade; brick, exterior insulated finish systems, glazing and metals

BATHROOMS
- 2- Bedroom Units shall have 2 baths; 1- Bedroom Units shall have 1 ½ baths
- Polished Brass/Chrome Fixtures & Accessories in Bathrooms
- Surface mount brushed nickel/brass vanity lights
- Half Baths/Powder rooms Pedestal Sink
- Full and ½ baths shall have White Laminate Cabinets and solid surface vanity tops with integral sink
- Baths shall have ceramic on floor and walls
- Elongated Commodes in all Baths
- Handicapped Units equipped per code
- Energy Star Rated Bathroom Fans per specification

KITCHEN
- Maple Cabinets with 30" – 42" Upper Wall Cabinets
- Premium grade Formica Counter Tops with 3 ½" backsplash
- Single Bowl Stainless Steel Drop in Sink
- Garbage disposal
- Single Lever Polished Chrome Faucet with spray
- Energy Efficient Appliance Package to include: Dishwasher, Self-Cleaning Oven, Microwave with re-circulating exhaust fan, Side x Side Refrigerator
- Appliance Packages to be Profile or Stainless Steel
- Surface mount light in Kitchen and Dining areas

ENERGY EFFICIENCY
- Energy Star Forced Warm Air High Efficiency Electric Furnace with Central Air Conditioning per unit
- Energy Star Rated 45 Gallon Electric Hot Water Heater per unit
- Energy Star Rated Efficient Double Glazed Double Hung Vinyl Tilt Windows with Screens and Grilles
- Energy Star Rated Insulation in Attic ceiling areas and Interior Walls

FLOORING
- Vinyl Flooring in Foyer, Kitchen, Laundry and Baths
- Carpeting in Hallways, Bedrooms, Dining Room, Living Room and Closets

INTERIOR FEATURES
- Six Panel Masonite Interior Doors with Brushed Nickel/Brass Hardware
- All doors, windows and cased openings shall be trimmed with 2 ½" casing. Baseboard shall be 3 ¼"
- Walls are painted one prime and one matte flat finish Sherwin Williams Linen White; trim is painted one prime and two coats semi-gloss latex Sherwin Williams White. Ceilings are smooth finish and painted white
- Ventilated Shelving in closets
- Washer and Electric Dryer per unit
- Approximately 8' Ceiling Height on all levels
- Cable/Data/Telephone ports in all bedrooms and living areas
- Outlets per code

COMMON AREAS

- Vestibules and lobby areas shall have tile and carpet flooring and painted walls
- Common hallways shall have carpeting and painted walls
- Centralized elevator lobby location (pedestrian and service) per building
- Centralized mail center per building
- Fully furnished amenity areas
- Management/Leasing Office on-site
- Private ground floor door entry with security system

CONSTRUCTION FEATURES

- Type I Construction, steel and concrete frame
- Concrete/Metal decking Flooring system
- Panelized exterior wall system; EIFS, glazing, brick
- Concrete/Metal decking Flooring system
- Interior Walls and Ceilings are gypsum wall board per code
- Closed Loop Mechanical System
- 150 Amp Electrical Service per unit
- Hard wired smoke and heat detectors with battery backup and one combination smoke/carbon monoxide detector per code
- Ground Fault Interrupt (GFI) installed per code
- Fire Suppression designed per code
- STC Rating designed per code

August 20, 2012 by LCW
O:\Bayside - Federated Companies\Corporate Guaranty\2final redline of CORPORATE GUARANTY AGREEMENT for Execution.docx

EXHIBIT 5

[Job Creation Agreement]

JOB CREATION AGREEMENT

THIS JOB CREATION AGREEMENT made this 15th day of October between **LEGACY PARK APARTMENTS LLC**, a Florida limited liability company, with a principal place of business at 801 Brickell Avenue, Suite 720, Miami, Florida 33131, its nominee or assignee, ("Legacy Park"), and **CITY OF PORTLAND, MAINE** a municipal corporation located at 389 Congress Street, Portland, Maine 04101 ("City").

WHEREAS Legacy Park is the assignee, by virtue of an Assignment and Assumption Agreement effective June 27, 2011, ("Assignment"), of a Purchase and Sale Agreement between The City of Portland, Maine, ("City"), effective June 23, 2011, (collectively, "Agreement"), as amended, for the purchase of certain blighted and brownfield real property located on Somerset Street, Portland, Maine known as Lots 1, 2, 3, 5, 6, 7, 8 and a portion of Lot 9, (collectively, "the Land"), consisting of approximately 3.25 acres formerly known as the "Bayside Railyard";

WHEREAS City, in order to create jobs and economic growth for the Citizens of Portland, Maine, has agreed to make a $9,007,000.00 contribution, ("City Grant Funds"), to Legacy Park from funds being provided to the City by the U.S. Department of Housing and Urban Development pursuant to the Bayside Redevelopment Project, Maine BEDI Grant and Section 108 Loan Program, ("HUD Funds"), toward the expense of the construction of a garage, with no fewer than 700 parking spaces and approximately thirty thousand square feet of commercial space on the first floor on a portion of Lot 5 and all of Lots 6 and 7 and a portion of Lot 9, ("Garage");

WHEREAS Section 11 of the Agreement requires Legacy Park to comply with all the terms and conditions related to the use of the HUD Funds contributed by the City as City Grant Funds to Legacy Park for the construction of the Garage related to providing documentation of job creation in accordance with the terms of this Job Creation Agreement.

NOW THEREFORE, in consideration of the foregoing and for good and valuable consideration the parties covenant and agree in this Job Creation Agreement as follows:

1. Job Creation Requirement:

   (a) Legacy Park shall create a minimum of 40 new[1] permanent, full-time or full-time equivalent jobs[2] in the Bayside neighborhood resulting from or related to the disbursement of the City Grant Funds for the construction of the Garage. ("Job Creation Requirement"). For the purpose of this Jobs Creation Agreement, Legacy Park may meet the Job Creation Requirement with jobs related to the operation of the Garage or jobs related to new or existing Bayside neighborhood business activity created or increased by the operation of the Garage. The new jobs may be, but are not required to be, employees of Legacy Park, or its lessees.

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[1] In accord with HUD law and regulations, these must be new jobs, and not re-located jobs.

[2] Per currently applicable regulations, full time jobs require a worker to work at least 1750 hours per year. Part time jobs require a worker to work at least 875 hours but less than 1750 hours per year. Part-time jobs **must** be converted to Full Time Equivalents (FTE). An FTE can be defined as two part time jobs. Also or said another way, no more than two part-time jobs can equal one full-time job.

City agrees to assist Legacy Park with information required by Legacy Park to meet the Reporting Requirements of this Job Creation Agreement related to Job Creation Requirement. In particular, when 'countable' new jobs are created by businesses that are not lessees of Legacy Park, the City will use best efforts to assist Legacy Park to obtain the necessary documentation from such employers or otherwise, to 'count' these jobs to, in part, meet this Job Creation Requirement; Legacy Park, however, acknowledges that this Job Creation Requirement (and the related reporting) remains its obligation. The jobs must be created within two (2) years from the issuance of the Certificate of Occupancy for the Garage.

(b) Legacy Park shall be deemed to have met the Job Creation Requirement and this Job Creation Agreement shall terminate upon submission to the City of a Position Summary Quarterly Report identifying the 40th full time or full time equivalent new job created in accordance with the provisions of Section 1(a) of this Job Creation Agreement, and verification and approval of the same by the City.

2. Reporting Requirements:

Legacy Park shall submit a Position Summary Quarterly Report, (Attachment A), for all new jobs created under this Job Creation Agreement on a quarterly basis until the Job Creation Requirement is met:

(a) total number of full time persons employed as a result of the completion of the Garage;

(b) total number of part time persons employed as a result of the completion of the Garage; and

(c) the employee name, job title, and average number of hours worked per week for the previous quarter.

AND EITHER (Choose 1 or 2 to be used for Legacy Park and it's Lessees reporting job creation):

1) Applicant/employer certifications (Attachment B) to be completed by all potential employees and the employer;

OR

2) A copy of the companies' payrolls. A baseline payroll must be submitted prior to the completion of the Garage.

3. Default. Legacy Park shall be deemed to be in default of this Job Creation Agreement if there is a failure to comply with any of the terms, conditions, provisions, or covenants of this Job Creation Agreement, or its obligations hereunder, including its obligation to meet

the Job Creation Requirement set forth herein. Any default will be considered a breach of this Job Creation Agreement and Section 9 of the Parking Garage Contribution Agreement. If Legacy Park informs the City, in good faith, at least 3 months before the deadline for its meeting this Job Creation Requirement that Legacy Park may not meet this deadline, with evidence and reasons for this, the City will use its best efforts to obtain an extension of this deadline from HUD or to otherwise change this requirement, such as a reduction in the number of required new jobs, and if it obtains such an extension or change, it shall immediately transmit to Legacy Park evidence of this extension or change by HUD, and this timetable shall thereby be correspondingly changed, without further action of the parties hereto being required.

4. Records. Legacy Park agrees to maintain a copy of all records related to the creation of jobs as required by this Job Creation Agreement for a period of four years after the creation of the 40th job. Legacy Park will, at any time during normal business hours, and as often as the City may deem necessary, permit the City, HUD or its designee to have full and free access to Legacy Park's records related to the new jobs identified in the Position Summary Quarterly Reports submitted under this Job Creation Agreement and to make copies of same at no cost or expense to the City. This right also extends to verification of the wages paid related to the new jobs. City agrees to review and maintain copies of such employment related records in complete confidentiality and in accordance with all State and Federal laws related to employment information and records.

5. Compliance with Laws and Regulations. Legacy Park, as the recipient City Grant Funds, shall comply with all applicable requirements of Federal laws related to the HUD Funds received by the City including, but not limited to, the applicable provisions of Title 24 Code of Federal Regulations, Section 570, state or local laws, regulations or ordinances and further agrees to abide by Title VIII of the Civil Rights Act of 1968 barring discrimination upon the basis of race, color, religion, familial status, sex or national origin, in the sale, lease, rental, use or occupancy of Legacy Park's property

6. Entire Agreement. This Job Creation Agreement and the Parking Garage Contribution Agreement constitute the entire agreement between the parties arising out of or related to Section 11 of the Agreement, as assigned and amended, and supersedes all prior representations and understandings of the parties. No modifications or amendments of the Job Creation Agreement shall be binding unless executed in writing by all the parties.

7. Waiver. No waiver of any of the provisions of this Job Creation Agreement shall be deemed, or shall constitute, a waiver of any other provisions, whether or not similar, nor shall any waiver constitute a continuing waiver. No waiver shall be binding unless executed in writing by the party making the waiver.

8. Successors. This Job Creation Agreement shall be binding upon and shall inure to the benefit of, the parties, their respective personal representatives, heirs, successors and assigns.

9. Assignment. Legacy Park shall not have the right to assign this Job Creation Agreement, or any rights hereunder, to any person or entity without the express written consent of the City. Such consent by the City shall not be unreasonably withheld.

10. Governing Law. This Job Creation Agreement shall be governed by and construed in accordance with the State of Maine.

11. Notices. Any notice by either party to the other party shall be in writing and shall be deemed to have been duly given when either delivered personally, or mailed by certified mail, return receipt requested, or sent by nationally recognized overnight courier, or sent by facsimile, or sent by e-mail addressed to the City at Portland City Hall, 389 Congress Street, Portland, Maine 04101, Attn: City Manager facsimile 207-874-8669, email: MHR@portlandmaine.gov, with a copy to, the Director of Economic Development, facsimile 207-756-8217, email: gmitchell@portlandmaine.gov, and another copy to Corporation Counsel, at the same address, facsimile 207-874-8497), email: gary@portlandmaine.gov , and to Buyer c/o The Federated Companies, 801 Brickell Avenue, Suite 720, Miami, Florida 33131, Attn: Jonathan Cox, facsimile (800) 523-5931, email: j_cox@federatedcompanies.com.

12. Counterparts. This Job Creation Agreement may be executed in any number of counterparts, which together shall constitute one document.

13. Paragraph Headings. The paragraph headings hereof are for convenience only and shall not form a part of this Job Creation Agreement or be used in the interpretation hereof.

IN WITNESS WHEREOF, the parties have executed this Job Creation Agreement as of the date first written above.

Legacy Park Apartments LLC:

Witness

By: Jonathan Cox
Its: Member

City of Portland, Maine

Judith Rosen
Witness

By: Mark H. Rees
Its: City Manager

Approved: Ellen Sanborn/Finance Director

LCW
Approved as to Form/Corp. Counsel

ATTACHMENT A

POSITION SUMMARY QUARTERLY REPORT

This report summarizes all the *new* employee information you have collected for new positions created since your last report. Please list all new employees hired. *Do not include new employees hired to fill job vacancies caused by an employee who left.* The report should be completed as of the last day of each quarter (March 31, June 30, September 30, and December 31) and submitted to avp@portlandmaine.gov by the 10th of the month following the quarterly period covered. The report is to be submitted by Legacy Park with either: 1) the Applicant/ Employer Certifications (attachment B) or 2) a copy of the company's payroll, including all weeks in the quarter. If you decide to submit the company payrolls you will need to provide a baseline payroll prior to utilizing the garage. If you have any questions, please do not hesitate to call at 207-874-8731.

Date: ____________________________

Company Name: ________________________________

Employee's Name	**Job Title**	**Work Hours per Week**

Number of Full Time Employees at End of Last Quarter ________

Number of Part Time Employees at End of Last Quarter ________

Number of <u>New</u> Full Time Positions Filled in this Quarter ________

Number of <u>New</u> Part Time Positions Filled in this Quarter ________

<u>Total</u> Full Time and Part Time Employees Ending this Quarter ________
(No more than two part time jobs can be added to create one full time equivalent.)

<u>Employer Certification</u>
To the best of my knowledge, I certify that the information contained in this position Summary Report is true and accurate.

____________________ ____________________
Quarter Ending Signature/Title

____________________ ____________________
Date Company

ATTACHMENT B
Applicant/Employer Certification

This employer has received funding from the City of Portland for business expansion that will create new jobs. The funding for this program comes from the U.S. Department of Housing and Urban Development. One of the requirements of this program is that we must report information about potential employees. Please complete the information requested below and return it to the employer. The information will not be used to evaluate you for this position.

Thank you in advance for your cooperation. If you have any questions about completing this form, please feel free to contact us at 207-874-8731.

APPLICANT CERTIFICATION

Name:______________________________Address:____________________________________

Employer:___________________________Job Applied For: ____________________________

How many persons live in your household? ___
The Head of Household is female ___ or male___

Check all that apply. I am:
_____ Hispanic or Latino
_____ American Indian or Alaskan Native
_____ Asian
_____ Black or African American
_____ Native Hawaiian or Other Pacific Islander
_____ White

Date: _____________ Signature: __________________________________

EMPLOYER CERTIFICATION

Job Title: _____________________________________

Full Time ______Part Time ______ # of Hours per Week _________

Starting Pay/Hourly Rate $

Date Interviewed: __/__/__Date Hired: __/__/__

Employer Name___________________________ Signature/Title_________________________

EXHIBIT 4

TECHNICAL AND FINANCIAL CAPACITY

TECHNICAL & FINANCIAL CAPACITY

The applicant has assembled a highly qualified team of professionals to plan, permit, and develop construction documents for the project. The Team is working under the direction of Mr. Jonathan Cox, The Federated Companies as Project Developer.

The Team services will be provided by the following companies and their respective team leaders:

CONSULTANT TEAM

Agent	Stephen B. Bushey, P.E. Fay, Spofford & Thorndike 778 Main Street, Suite 8 South Portland, ME 04106 (207) 775-1121 – Work (207) 879-0896 – Fax (207) 756-9359 – Cell sbushey@fstinc.com
Civil Engineer	Bo E. Kennedy, P.E. Fay, Spofford & Thorndike 778 Main Street, Suite 8 South Portland, ME 04106 (207) 775-1121 – Work (207) 879-0896 – Fax (207) 318-8364 – Cell bkennedy@fstinc.com
Architect	David Hancock AIA LEED CBT Architects 110 Canal Street Boston, MA 02114 (617) 646-5353– Work Hancock@cbtarchitects.com
Surveyor	Ellen Brewer Owen Haskell, Inc. 390 US Route 1, Unit 10 Falmouth, Maine 04105 (207) 774-0424 – Work (207) 774-0511 – Fax ebrewer@owenhaskell.com
Landscape Architect	Robert Metcalf, RLA Mitchell & Associates 70 Center Street Portland, Maine 04101 (207) 774-4427 rmetcalf@mitchellassociates.biz

EXPERIENCE OF PROJECT TEAM

The team of consultants retained by developer has expertise and experience in the design of similar commercial projects. Resumes of key personnel for development team can be provided upon request.

The applicant also has significant experience in the development and management of large commercial projects. A listing of the additional real estate projects for which the Applicant's development team has been involved can be provided upon request.

FINANCIAL CAPACITY

The applicant has the means at its disposal for financing the proposed midtown project. A Financial Capacity letter is included at the end of this attachment.

HFF

Jonathan Cox
PO Box 370008
Miami, FL 33137-4110
Sent via e-mail: j_cox@federatedcompanies.com

November 3, 2014

Re: Letter Regarding Federated Companies

Dear Mr. Cox,

The following memorandum confirms HFF’s long standing relationship with the Federated Companies, the proposed borrower for your loan. HFF confirms that and the borrower has the financial capacity and relevant experience to acquire financing for the "midtown" project in Portland, ME, as revised, the estimated cost of which is +/- $85M. Our firm has worked closely with the Federated Companies on a number of recent transactions including arranging financing for a variety of multi-housing and retail properties.

HFF is a leading mortgage banker in the U.S. whose extraordinary transaction volume provides the unparalleled capital markets knowledge necessary to develop the creative financing strategies, meeting and exceeding client expectations. Our long established relationships with insurance companies, investment banks, foreign and domestic banks, a Fannie Mae lender, Freddie Mac, and pension funds have allowed us to provide our clients with the most competitive terms and most reliable executions in the market.

Should you have any questions feel free to contact us at the address below.

Sincerely,

Scott Wadler

Scott Wadler

HFF | 1450 Brickell Avenue, Suite 2950**|** Miami, FL 33131
tel 305.448.1333.**| fax** 305.448.9499 **|** www.hfflp.com
swadler@hfflp.com

EXHIBIT 5

UTILITIES NARRATIVE

UTILITIES NARRATIVE

The public utility providers, which will serve the project, are as follows:

Water Attn: Norm Twaddell Portland Water District 22 Douglas Street P.O. Box 3533 Portland, Maine 04104 207.761.8310	**Sewer** Attn: Frank Brancely, B.A., M.A. David-Margolis-Pineo, P.E. City Of Portland Public Services Department 55 Portland Street Portland, Maine 04102 207.874.8840
Power Attn: Jamie Cough Central Maine Power 162 Canco Road Portland, Maine 04103 207.791.1023	**Telephone** Attn: John Caprio Fairpoint Communications 5 Davis Farm Road Portland, Maine 04103 207.797.1678
Cable Attn: Andrew Trottier Time Warner Cable 118 Johnson Road Portland, Maine 04102 877.546.0962	**Natural Gas** Attn: Joe Render, Kelly Fowler Unitil (formerly Northern Utilities) 1075 Forest Avenue Portland, Maine 04103 207.541.2505

Previous approvals for a larger scale midtown project demonstrated the utility infrastructure was adequate to serve the project. Previously in 2013, CMP cautioned the electrical demand was approaching a threshold wherein an upgrade to the substation behind the Portland Post Office would be required. This new application will place substantially less demand on the utility infrastructure than the previous plan. This is demonstrated by the following comparison of the scope of the project:

Previous (2013)	Proposed (Nov. 2014)	Change
100,000 SF of Retail	91,500 SF of Retail	-8,500 SF of Retail
560 Apartments	445 Apartments	-115 Apartments
160 Condominiums	--	-160 Condominiums

For this new application, the applicant has requested new “ability to serve” letters from the various utilities. Jamie Cough of CMP is coordinating with the project design team to determine if the substation will be adequate for the midtown project. The applicant is confident the combination of the following will keep the electric demand levels below those which would exceed current capacity of the existing substation:

1. The substantial reduction in the size and scope of the project of this application compared with the prior application;
2. The use of highly efficient lighting and power equipment; and
3. The use of natural gas in lieu of electrical power, where appropriate, to reduce the electrical demand.

The precise method of avoiding a demand load which exceeds CMP's substation capability at the Post Office will be part of the final building design by the project's MEP consultants. The applicant will coordinate with CMP during the design of the building.

The applicant has investigated the availability of utility service in the area. Existing conditions and proposed plans showing the current sewer, water, storm drainage, gas, communications, and electrical services along the streets, accompany this submission.

All utilities except a limited amount of storm drainage will come from services along Somerset Street. The exceptions are:

1. Sewer, power, and water services for midtown one will come from services connected to extensions of the mains on Pearl Street Extension from Somerset Street;
2. midtownThree will have sewer service from the Chestnut Street sewer;
3. midtownFour will have sewer, water, gas, power, and communications services from utility extensions along Elm Street; and
4. The distribution system for power and individual services to the midtown project will come from the northerly (public trail side) of the project.

Conservative assumptions were used to determine a flow rate for use in requesting the ability to serve the project with sewer and water. The flows used for this purpose were based upon a tabulation of flow for water and sewer based upon the Maine State Plumbing Code Part II and the assumed uses within the project. This tabulation is attached and shows that a flow of about 106,500 gallons per day was used when the ability to serve letter was requested from both the City (sewer) and the Portland Water District.

The utility service adjustments, replacement, and design required numerous meetings with the utility providers, the City and the Federated team to insure the layout met the utility needs of the project, did not preclude future development in other portions of Bayside, to satisfy aesthetic concerns, and to avoid conflict with other project elements. Resolution of utility issues is also needed as part of the City's application to re-subdivide the property since the requirement to place the utilities underground is part of the subdivision. Federated will become the owner of the lots with the City retaining lots two and nine.

PREVIOUS ABILITY TO SERVE INFORMATION

- **Water:** The Portland Water District's previous ability to serve letter (11/19/12) for the project is enclosed with a schematic of the area showing hydrants and recent hydrant flow data. The data shows the 16-inch main on Somerset Street is expected to have adequate fire flow capacity. An estimate of the available fire flow will need to consider a pressure reduction of about 75 psi to account for the elevation difference between the top and bottom floors of the building. Losses inside the building and the sprinkler distribution system will need to be computed by the designer of the sprinkler system. The Portland Water attended several of the past year's utility coordination meetings. Their comments have been fully addressed except for a requirement to conduct test pits to allow the relative water main and lightweight concrete elevations to be confirmed such that adequate provisions are made to protect the main during construction.
- **Sewer:** The separated sewer along Somerset Street has stubs that were placed for serving the project site. Some of these existing stubs will be used but other new services will be required as

shown on the utility plans that accompany this application. An updated wastewater capacity application has been submitted. The previous ability to serve and capacity letter received from the City of Portland is enclosed. David Margolis-Pineo facilitated many of the utility coordination meetings as well as reviewed the sewer plans for the project.

Grease traps to permit potential restaurants to occupy portions of the project are included on the plans. midtownOne, Two, Three and Four will have this capacity. The plans also include oil water separators and service connections for the internal decks of the parking garage with surface water from the top deck being directed to the water quality pretreatment systems prior to discharge to municipal storm drains.

- **Gas:** Unitil has indicated they have the ability to serve the project but work will be required to permit the project to use gas as a major energy source. The work will include replacement of the gas line along portions of Somerset Street where reconstruction to raise the street elevation is proposed.

- **Drainage:** The project site is served by a separated storm sewer, which was constructed as part of a sewer separation project around 2003. The City's storm drain construction included drainage stubs to serve the project. A formal drainage study has been prepared to determine storm water management for the project.

  The project is required to meet City's water quality standards. A series of options to meet the stormwater quality standards is provided in the stormwater management plan that accompanies this submission. The selected options are depicted on the plan set that accompanies this application.

- **Power and Communications:** The existing electrical and communications lines are currently overhead along Somerset Street. The power includes a three-phase service. The telephone and communications lines will be placed underground on the northerly side of Somerset Street when it is reconstructed. CMP has issued an ability to serve letter for the project with financial obligations for the relocation and new services under discussion between the City (who is the subdivider of the property) and Federated (who plans to purchase lots 1, 2, 3, 4, 6, and 7) who will construct the midtown project.

Attachment A – Ability to Serve Information

- Portland Water District
- Fairpoint Communications
- Time Warner Cable
- Central Maine Power
- Unitil
- City of Portland Wastewater Application

Attachment B – Previous Ability to Serve Information

- Portland Water District
- Fairpoint Communications
- Time Warner Cable
- Central Maine Power
- City of Portland Wastewater Capacity Application and Ability to Serve Letter

Utility Plans (Drawings C-4.0 to C-4.4 in Plan Set) show the utility extension and plans for the entire midtown project.

ATTACHMENT A

From: Celina Daniell
To: "AMAP Means E-mail"; "Cough, Jamie"; "Caprio, John"; "andrew.trottier@twcable.com"; "Fowler, Kelly"; "ghavu@pwd.org"; Norman Twaddel (ntwaddel@pwd.org)
Subject: Ability to Serve Request midtown Project
Date: Monday, November 10, 2014 2:44:00 PM
Attachments: midtown Project program statement11.10.2014.pdf

Our office sent Ability to Serve Request letters to you on November 3, 2014 regarding the midtown project in Portland. Please note the project numbers have changed slightly from 440 units to 445 and 800 spaces to 828 off street parking spaces. Please see attached breakdown.

If you have any questions with regards to the number changes, please contact our office.

Thank you,

Celina Daniell

Celina M. Daniell | Technical Assistant
FST 100 YEARS
FAY, SPOFFORD & THORNDIKE
Celebrating a Century of Engineering Excellence
778 Main Street, Suite 8 | South Portland, ME 04106
T: 207-775-1121 x4101 | F: 207-879-0896
cdaniell@fstinc.com | www.fstinc.com |

midtown Project, Somerset St., Portland, ME

The accommodation in the four buildings is as follows:

*midtown*One Building:
7,500 sq. ft. net retail area
15 studio apartments, 1 full bath each, average 455 net sq. ft. each
40 1BR apartments, 1 full bath each, average 715 net sq. ft. each
25 2BR apartments, 2 full baths each, average 955 net sq. ft. each
[each apartment and studio has one kitchen sink, dishwasher, and washer/dryer]
[residential heating and cooling by electric split-system heat pumps; retail AC by air-cooled electric AC machines]
Total 80 apartments, net rental area 59,300 sq. ft. +/- Gross building area 90,600 sq. ft. +/-

*midtown*Two Building:
32,000 sq. ft. net retail area
828 total (including 17 handicap and 25 coin-op EV charging stations) parking spaces
[garage is naturally ventilated; elevator machine rooms will have electric heat pumps; retail AC by air-cooled electric AC machines]
Gross building area 266,500 sq. ft. +/-

*midtown*Three Building:
44,000 sq. ft. net retail space
90 1BR apartments, 1 full bath each, average 600 net sq. ft. each
170 2 BR apartments, 2 full baths each, average 800 net sq. ft. each
[each apartment has one kitchen sink, dishwasher, and washer dryer]
[residential heating and cooling by electric split-system heat pumps; retail AC by air-cooled electric AC machines]
Total 260 apartments, net rental area 190,000 sq. ft. +/- Gross building area 289,000 sq. ft. +/-

*midtown*Four Building:
8,000 sq. ft. net retail area
105 studio apartments, 1 full bath each, average 400 net sq. ft. each [each studio has kitchen sink and dishwasher
no washer dryers in units; building will have coin-op W/Ds
[residential heating and cooling by packaged terminal air conditioners; retail AC by air-cooled electric AC machines]
Total 105 studio/lofts; Net rental area 42,000 sq. ft. +/- Gross building area 69,000 sq. ft. +/-

Total *midtown* Project:
Total 91,500 sq. ft. net retail space
Total 828 off-street parking spaces
Total 445 apartments, of which:
  120 studios
  130 1BR
  195 2BR
Total gross building area 715,100 sq. ft. +/-

Prepared by CBT Architects 10 November, 2014

November 3, 2014

Mr. Rico Spugnardi
Portland Water District
225 Douglass Street
PO Box 3553
Portland, ME 04104-3553

Subject: Request for Ability to Serve
midtown Project
Somerset Street – Portland, Maine

Dear Rico:

Fay, Spofford & Thorndike has been retained by The Federated Companies who plan to develop a mixed-use project on Somerset and Chestnut Street. An aerial photograph of the site and a survey are enclosed which identify the locus of the site. The midtown project will continue to consist of Retail shops or restaurants on the ground floor level with about five stories of housing three of the four buildings. The fourth building will have six stories of structured parking above the ground floor retail or restaurants.

The average daily consumptive flows are not expected to exceed 105,000 gallons per day, an average of 73 gallons per minute, and a peak flow of about 353 gallons per minute. There may be a small irrigation system for landscaping and the buildings will be sprinkled with fire services.

We are required to include an updated ability to serve letters from all utility providers as part of our final technical submission for the city application that we will make on November 14, 2014.

Our office is interested in the following information:

1. Any up updated records of hydrant tests bounded by the project area including Preble Street, Marginal Way, Franklin Arterial, and Somerset Street.

2. Can each building have its own service if there are multiple buildings even though there may be a single owner?

3. Verification that Portland Water District has the ability to provide water for the project.

If you have any questions with regards to this request, please contact our office.

Sincerely,

FAY, SPOFFORD & THORNDIKE

Bo Kennedy, P.E.
Project Engineer

BEK/cmd

Enclosure

c: Nick Wexler
David Hancock
AP Means – Glissen Havu

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midtown by Federated Companies

Portland, Maine

31-Oct-14

The exact size and makup of the mixed used development is unknown and subject to refinement.

A program that Fay, Spofford &Thorndike would anticipate to be adequate and conservative for the "ability to serve" requests for water and sewer would be as follows:

Use	Quantity	Description	Unit	Unit Flow (gpd)	Total Flow (gpd)
midtownOne	80	Dwelling Units	Two bedroom apartments[1]	180	14,400
midtownOne	11,000	Retail	Area (SF)	N/A	N/A
midtownOne	10	Retail	Employee	12	120
midtownOne	2	Retail-Toilet	Toilet	325	650
midtownOne	114	Restaurants - Eating Place 2 meals/Day	Seats	25	2,850
			midtownOne Subtotal		18,020
midtownTwo	0	Dwelling Units	Two bedroom apartments[1]	180	-
midtownTwo	27,200	Retail	Area (SF)	N/A	N/A
midtownTwo	24	Retail	Employee	12	288
midtownTwo	3	Retail-Toilet	Toilet	325	975
midtownTwo	281	Restaurants - Eating Place 2 meals/Day	Seats	25	7,025
			midtownTwo Subtotal		8,288
midtownThree	260	Dwelling Units	Two bedroom apartments[1]	180	46,800
midtownThree	40,000	Retail	Area (SF)	N/A	N/A
midtownThree	35	Retail	Employee	12	420
midtownThree	4	Retail-Toilet	Toilet	325	1,300
midtownThree	413	Restaurants - Eating Place 2 meals/Day	Seats	25	10,325
			midtownThree Subtotal		58,845
midtownFour	100	Dwelling Units	Two bedroom apartments[1]	180	18,000
midtownFour	9,000	Retail	Area (SF)	N/A	N/A
midtownFour	8	Retail	Employee	12	96
midtownFour	1	Retail-Toilet	Toilet	325	325
midtownFour	93	Restaurants - Eating Place 2 meals/Day	Seats	25	2,325
			midtownFour Subtotal		20,746
midtown	440	Dwelling Units	Two bedroom apartments[1]	180	79,200
midtown	87200	Retail	Area (SF)	N/A	N/A
midtown	77	Retail	Employee	12	924
midtown	10	Retail-Toilet	Toilet	325	3,250
midtown	901	Restaurants - Eating Place 2 meals/Day	Seats	25	22,525
			midtown Total		105,899
Daily Flow (gpd)	105,899				
population (65 gpcapd)	1,629.22				
Peak Factor [4]	4.80				
Daily Flow (gpm)	74				
Peak Flow (gpm)	353				

Basis Notes:

1. Multifamily dwelling units assume 120 gpd for 1-bedroom units or 90 gpd/bedroom bedroom. The distribution of unit sizes are unknown and FST has assumed a conservative approach of all 2-bedroom units

2. These flows are based upon the State of Maine Subsurface Disposal Rules.

3. Generally FST finds the rates in the Code to be about double the average daily flows.

4. Peaking factor is based on McGraw-hill Series in Water Resources and Environmental Engineering, the peaking factor would be in the order of 4.8 (Page 30, Figure 2-4).

5. Acutal flows may be substantially less. This data is for the purpose of the ability to serve request only, not for use computation

November 3, 2014

Mr. Marty Pease
FairPoint Communications
5 Davis Farm Road
Portland, ME 04103

Subject: Request for Ability to Serve
midtown Project
Somerset Street – Portland, Maine

Dear Mr. Pease:

The Federated Companies intends to construct a mixed-use project on Somerset Street in Portland, Maine. A conceptual rendering of the proposal is enclosed. This will be changed as the design proceeds over the course of the next few months as part of a new permitting effort.

Our office has been retained by The Federated Companies to assist in the civil engineering and preparation of permit applications. The midtown project has been scaled down from the project presented to you in 2012. The exact number of living units, retail, or commercial spaces will be better known over the next month or so. However, we are confident the mix will consist of approximately:

- 440 residential dwelling units; and
- 87,200 square feet of retail, restaurants or commercial space

A parking garage will be constructed on site and will provide approximately 800 parking spaces.

We are required to include ability to serve letters from all utility providers as part of our final technical submission for the City application which we would we will make on November 14, 2014.

If you have any questions with regards to this request, please contact our office.

Sincerely,

FAY, SPOFFORD & THORNDIKE

Bo Kennedy, P.E.
Project Engineer

BEK/cmd

Enclosure

c: Nick Wexler
David Hancock

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Fairpoint Communications
Engineering Dept.
5 Davis Farm Rd
Portland, Me. 04103
November 4, 2014

Bo Kennedy, P.E. Project Engineer
FAY, SPOFFORD & THORNDIKE
778 Main St
Suite 8
South Portland, Me. 04106

To whom it may concern:

Fairpoint Communications does have the ability to service the proposed Federated Companies "Midtown Project" located on Somerset St Portland, Me. per the Public Utilities Commission Tariff.

Sincerely,
John Caprio
Senior Network Engineer
Fairpoint Communications
jcaprio@fairpoint.com
207-797-1678

FST
100 YEARS

November 3, 2014

Mr. Andrew Trottier
Time Warner Cable
118 Johnson Road
Portland, ME 04102

Subject: Request for Ability to Serve
midtown Project
Somerset Street – Portland, Maine

Dear Mr. Trottier:

The Federated Companies intends to construct a mixed-use project on Somerset Street in Portland, Maine. A conceptual rendering of the proposal is enclosed. This will be changed as the design proceeds over the course of the next few months as part of a new permitting effort.

Our office has been retained by The Federated Companies to assist in the civil engineering and preparation of permit applications. The midtown project has been scaled down from the project presented to you in 2012. The exact number of living units, retail, or commercial spaces will be better known over the next month or so. However, we are confident the mix will consist of approximately:

- 440 residential dwelling units; and
- 87,200 square feet of retail, restaurants or commercial space

A parking garage will be constructed on site and will provide approximately 800 parking spaces.

We are required to include ability to serve letters from all utility providers as part of our final technical submission for the City application which we would we will make on November 14, 2014.

If you have any questions with regards to this request, please contact our office.

Sincerely,

FAY, SPOFFORD & THORNDIKE

Bo Kennedy, P.E.
Project Engineer

BEK/cmd

Enclosure

c: Nick Wexler
David Hancock

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From: Pelletier, Mark
To: Celina Daniell
Subject: RE: Ability to Serve Request midtown Project
Date: Tuesday, November 11, 2014 9:19:06 AM

Celina,

This will by my project as Portland has been my area for many years now, Please remove Andy Trottier to all your correspondence. I have been involved with correspondence with this propose project from the beginning. I believe in November of 2012 I sent a letter out for Ability to Serve?

I will get another one to you here later today as I'm heading out to 2 Pre-con meetings this morning.

Mark

Time Warner Cable
118 Johnson Rd,
Portland Maine 04072
207-253-2325

October 15, 2014

Mr. Jamie Cough
Central Maine Power Company
162 Canco Road
Portland, ME 04103

Subject: midtown Project
New Plan

Dear Jamie:

The Federated Companies are reducing the scale of this project and will be submitting a new Preliminary Level 3 Site Plan to the City of Portland on Friday. The project will be constructed at one time and not phased.

The uses for the property will remain retail on the ground floor with residential units above and one parking garage (not 2).

The prior retail was calculated on 100,000 SF of retail.

Comparably, the makeup of the project changes are as follows:

Building A:

- 6,300 SF net retail area
- 15 studio apartments, 1 full bath each, average 455 net SF each
- 40 1 BR apartments, 1 full bath each, average 715 net SF each
- 25 2 BR apartments, 2 full baths each, average 955 net SF each
- Each apartments and studio has one kitchen sink, dishwasher, and washer/dryer
- Total 90 apartments

Building B:
30,700 SF net retail area

Building C:

- 40,000 SF net retail space
- 90 1 BR apartments, 1 full bath each, average 600 net SF each
- 170 2 BR apartments, 2 full baths each, average 800 net SF each
- Each apartment has one kitchen sink, dishwasher, and washer dryer
- Total 260 apartments

Building D:

- 7,400 SF net retail area
- 100 studio apartments, 1 full bath each, average 420 net SF each
- Each studio has kitchen sink and dishwasher - no washer dryer; building will have coin-op W/Ds

Total 84,400 SF retail space
Total 440 apartments

The property along the northerly side of Somerset Street between Chestnut and Elm Street was previously three parcels. This is being changed to one parcel. We assume the number of transformers to serve this can be reduced from three to one. Subsequently it seems that the midtown 4 building could be fed from a second transformer located adjacent to the midtown 3 parcel. Do you concur?

Our office received this information just recently. In addition to wanting to provide you with the most recent information we have, we also wanted to get your concurrence on the reduction of the number of transformers and well as moving the transformer for midtown 4. We intend to file a preliminary plan on Friday with this reduction in the number of transformer.

We would appreciate your concurrent on reducing the number of transformers at your earliest convenience.

Sincerely,

FAY, SPOFFORD & THORNDIKE

William G. Hoffman, P.E.
President

WGH/cmd

Enclosures

c: Marshal Ripley

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11/11/2014

Celina M. Daniell
Technical Assistant
FAY, SPOFFORD & THORNDIKE
778 Main Street, Suite 8
South Portland, ME 04106
T: 207-775-1121 x4101
cdaniell@fstinc.com
Sent via email

RE: Ability to Serve Letter for Midtown Project in Portland

Dear Ms. Daniell:

CMP has the ability to serve the proposed project located on Somerset Street in Portland, Maine, in accordance with our CMP Handbook (web link below). We can provide you the desired pad or pole mounted transformers per your request and city approval, in accordance with our CMP Standards Handbook. If you have any questions on the process, or need help in completion of the documents, please feel free to contact me.

New Service Milestones

- Call 1-800-565-3181 to establish a new account and an SAP work order.
- Submit any electronic drawings (PDF (preferred) or DWG files) of the site layout and proposed electrical connections if you have them.
- Submit Load information. Please complete this CMP spreadsheet using load information
- Submit the easement information worksheet. Please complete this CMP form and either email or fax back to us.
- Preliminary meetings with CMP to determine the details of job
- Field planner design appointment to cost out job and develop CMP Invoice.
- Submit invoice for payment.
- Easements signed and payment received.
- Job scheduled for completion after the electrical inspection has been received.

This process can take several months, depending upon several factors including transformer delivery, potential substation upgrades, return of completed paperwork, and other jobs in the system that may be ahead of yours. In addition, contact with the other utilities, including telephone and cable, should be commenced as soon as practical. They may have additional work or charges in addition to the CMP work required to bring your project on line.

For your convenience, here is a link to the CMP Website which contains our Handbook with details on most service requirements:

> CMP Handbook of Standard Requirements
> (http://www.cmpco.com/MediaLibrary/3/6/Content%20Management/YourAccount/PDFs%20and%20Docs/handbook.pdf)

If you have any questions, please contact me.

Regards,

Jamie Cough

Jamie Cough
Energy Services Advisor
Central Maine Power Company
162 Canco Road
Portland, ME 04103
207-842-2367 office
207-458-0382 cell
207-626-4082 fax

November 3, 2014

Ms. Kelly Fowler, Sr. Business Development Rep.
Unitil
1075 Forest Avenue
P.O. Box 3586
Portland, Maine 04104

Subject: Request for Ability to Serve
midtown Project
Somerset Street – Portland, Maine

Dear Ms. Fowler:

The Federated Companies intends to construct a mixed-use project on Somerset Street in Portland, Maine. A conceptual rendering of the proposal is enclosed. This will be changed as the design proceeds over the course of the next few months as part of a new permitting effort.

Our office has been retained by The Federated Companies to assist in the civil engineering and preparation of permit applications. The midtown project has been scaled down from the project presented to you in 2012. The exact number of living units, retail, or commercial spaces will be better known over the next month or so. However, we are confident the mix will consist of approximately:

- 440 residential dwelling units; and
- 87,200 square feet of retail, restaurants or commercial space

A parking garage will be constructed on site and will provide approximately 800 parking spaces.

The residential units will operate on electrical heat pumps, electrical dryers and appliances and will NOT include a gas supply component; however, the first floor retail space will have a gas supply.

On behalf of The Federated Companies, we are requesting the following information as soon as possible:

1. Assuming the above are typical restaurants, and retail space, what would you expect the typical demand or range of demand would be:
    - Gas heat?
    - Gas heat with commercial kitchens and a laundry mat?

2. Does Unitil expect to have or expect to be able to provide natural gas service options for the project tenants?

3. Will you continue to be the point of contact at Unitil for this project?

We are required to include ability to serve letters from all utility providers as part of our final technical submission for the City application which we would we will make on November 14, 2014.

If you have any questions with regards to this request, please contact our office.

Sincerely,

FAY, SPOFFORD & THORNDIKE

Bo Kennedy, P.E.
Project Engineer

BEK/cmd

Enclosure

c: Nick Wexler
David Hancock

R:\3062B - midtown Amended - Portland, ME\Admin\Correspondence Out\Utilities\3062B 2014.11.04 (Unitil).doc

Unitil
ME GAS OPERATIONS

November 12, 2014

Mr. Bo Kennedy, P.E.
Project Engineer
Fay, Spofford &Thorndike
778 Main Street, Suite 8
South Portland,ME 04106

Re: midtown Project, Somerset Street, Portland, ME

Dear Mr. Kennedy:

Thank you for your interest in using natural gas for the above referenced project.

Unitil has natural gas in the vicinity of this project to provide service. The evaluation to complete the design, costs and determining what the customer contribution is, can be completed once Unitil receives the completed design and load information. Unitil welcomes the opportunity for further discussions regarding this project.

If you have any further questions or require additional information, please contact me directly at (207) 541-2505 or at fowler@unitil.com.

Sincerely,

Kelly Fowler
Sr. Business Development Representative
Unitil Corporation
(o) 207-541-2505 (f) 207-541-2565

ME GAS CUSTOMER ENERGY SOLUTIONS
1075 Forest Avenue
Portland, ME 04103-3586

T 888-486-4845 www.unitil.com

ATTACHMENT B

Portland Water District
FROM SEBAGO LAKE TO CASCO BAY

November 19, 2012

DeLuca-Hoffman Associates, Inc.
778 Main Street, STE 8
South Portland, ME 04106

Attn: William Hoffman, P.E.
Re: Proposed Maritime Landing Project; Somerset Street, Portland
Ability to Serve with PWD Water

Dear Mr. Hoffman:

The Portland Water District has received your request for an Ability to Serve determination for the noted site submitted on October 26, 2012. Based on the information provided, we can confirm that the District will be able to serve the proposed project as further described in this letter.

Please note that this letter does not constitute approval of this project from the District. Please review this letter for any special conditions specified by the District and to determine the appropriate next steps to take to move your project through the submittal and approval process.

Existing Site Service

According to District records, the project site does currently have existing water service. A 1-inch diameter copper water service line at 25 Somerset Street, a ¾-inch diameter plastic water service line at 3 Somerset Street and a ¾-inch diameter copper water service line at 107 Somerset Street, located as shown on the attached water service cards, provide water service to this site. Please refer to the "Conditions of Service" section of this letter for requirements related to the use of these services.

Water System Characteristics

According to District records, there is a 16-inch diameter ductile iron water main on the north side of Somerset Street west of the Chestnut Street intersection and a 16-inch diameter ductile iron water main on the south side of Somerset Street east of the Chestnut Street intersection and a public fire hydrant located adjacent to the site.

The current data from the nearest hydrant with flow test information is as follows:

Hydrant Location:	Somerset Street opposite Pearl Street
Hydrant Number:	POD-HYD01864
Last Tested:	6/22/2006
Static Pressure:	112 psi
Residual Pressure:	108 psi
Flow:	2,846 GPM

225 DOUGLASS STREET P.O. BOX 3553 PORTLAND, MAINE 04104-3553
PHONE: 207.774.5961 FAX: 207.761.8307 WEB: WWW.PWD.ORG

Public Fire Protection

You have not indicated whether this project will include the installation of new public hydrants to be accepted into the District water system. The decision to require new hydrants and to determine their locations is solely that of the local fire department. It is your responsibility to contact the Portland Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.

Domestic Water Needs

The ability to serve requested noted that the average daily consumptive flows are not expected to exceed 170,000 gallons per day (GPD), an average of 118 gallons per minute (GPM), and a peak flow of 400 GPM. The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project. Based on the high water pressure in this area, we recommend that you consider the installation of pressure reducing devices that comply with state plumbing codes.

Private Fire Protection Water Needs

You have indicated that this project will require water service to provide private fire protection to the site. Please note that the District does not guarantee any quantity of water or pressure through a fire protection service. Please share these results with your sprinkler system designer so that they can design the fire protection system to best fit the noted conditions. If the data is out of date or insufficient for their needs, please contact the MEANS Division to request a hydrant flow test and we will work with you to get more complete data.

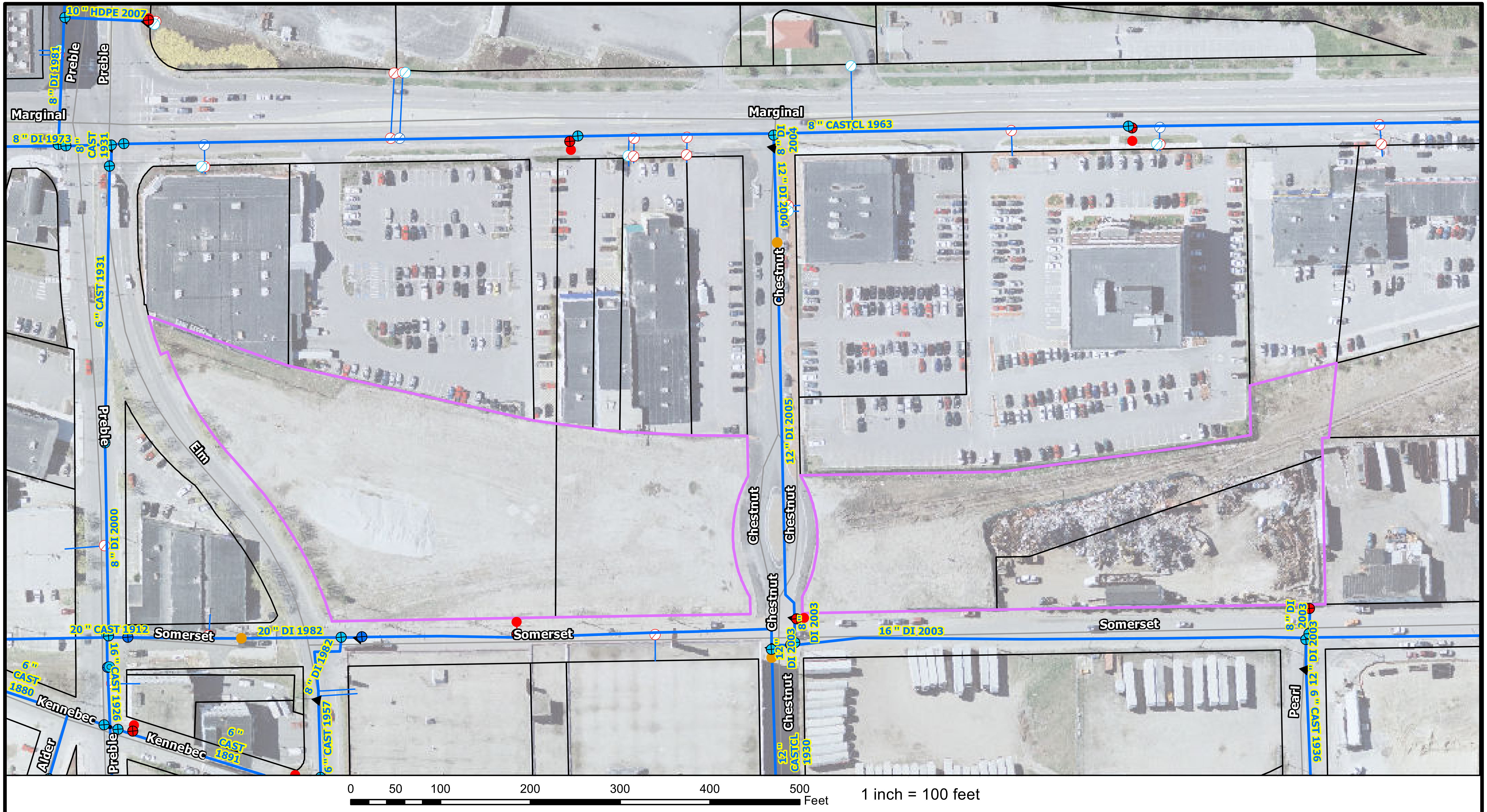
Conditions of Service

The District can confirm that the existing water system has the capacity to serve the proposed mixed use development on Somerset Street in Portland. If any of the existing services will no longer be used as a result of the development then they must be retired per PWD standards. This includes shutting the corporation valve and cutting the pipe from the water main (for 2-inch and smaller services) or removing the gate valve and capping the tapping sleeve (for 4-inch and larger services). New services may be installed from the water main in Somerset Street or Preble Street along the frontage of each respective parcel. Please note that only one meter and one bill will be associated to each domestic service line. This meter must be located in a common space that all tenants could gain access to if necessary. Multiple fire and domestic services may be installed to a single site if desired.

As your project progresses, we advise that you submit any preliminary design plans to the MEANS Division for review of the water service line configuration. We will work with you or your representative to ensure that the design meets our current standards. If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District

Rico Spugnardi, P.E.
Business Development Engineer



PORTLAND WATER DISTRICT
225 Douglass Street
Portland, ME 04104

Legend

- ● Air Valve
- ● Blow Off
- ● By Pass
- ● Distribution
- ● Transmission
- ● Connection
- ● Attribute Change
- ▲ Reducer
- ● Hydrant
- ● Hydrant Control
- ○ Combined Service
- ○ Domestic Service
- ○ Fire Service
- ● Private Hydrants
- ○ Meter Pits
- ● Manhole
- ● CSO
- → Gravity
- → Force

Somerset Street

Portland

Disclaimer: This map is suitable for preliminary study and analysis and is based on PWD record information. PWD is not liable for any damages whatsoever resulting from inaccurate data or from errors made in the location and marking of its infrastructure.

Drawn By: GJH

Prepared For: DeLuca-Hoffman Associates

Scale: As Noted

Date: November 2, 2012

Fairpoint Communications
Engineering Dept.
5 Davis Farm Rd
Portland, Me. 04103
November 26, 2012

William G. Hoffman
Deluca- Hoffman Associates Inc.
778 Main St
Suite 8
South Portland, Me. 04106

Bill,

Enclosed is the "Ability to Serve Letter" as requested for the Somerset St Project. I have also enclosed info pertaining to the Somerset St project from 2003. What the City of Portland has actual constructed would need to be verified with the City. Fairpoint would also need as built plans if in fact the City has constructed the Manhole systems on Somerset St.

Regards

John R Caprio
Engineer
Fairpoint Communications
5 Davis Farm Rd
Portland, Me. 04103
jcaprio@fairpoint.com
207-797-1678

NOV 27 2012

Fairpoint Communications
Engineering Dept.
5 Davis Farm Rd
Portland, Me. 04103
November 26, 2012

William G. Hoffman
Deluca- Hoffman Associates Inc.
778 Main St
Suite 8
South Portland, Me. 04106

To whom it may concern:

Fairpoint Communications does have the ability to service the proposed Maritime Landing Project located on Somerset St Portland, Me. per the Public Utilities Commission Tariff. Fairpoint would need a path from building to Fairpoint's manhole system.

Sincerely,
John Caprio
Engineer
Fairpoint Communications
jcaprio@fairpoint.com
207-797-1678

Department of Public Works

CITY OF PORTLAND

January 27, 2003

Susan Sarrette, Engineer
VERIZON COMMUNICATIONS
5 Davis Farm Road, Floor 2
Portland, ME 04103

Re: Somerset Street Sewer Separation & City of Portland Future Technology/Business Park Development

Dear Sue:

The purpose of this letter is to summarize our discussions from Thursday, January 23, 2003, regarding the City's offer to install a duct bank to benefit Verizon Communications. As we discussed, it is our intention to install a duct bank, per your details and specification, in conjunction with the Somerset Street Sewer Separation project. The purpose of this duct bank is to support the anticipated future needs associated with the potential tenants of the City's Technology/Business Park. During our meeting, you indicated a preference for locating your facility on the southerly side of Somerset Street, outside of the paved roadway.

Our request is that you provide a preliminary duct bank layout that serves future needs for the development of this area. Your layout should include locations for the required manhole structures, as well as any "street crossings" that may be necessary to access the City land. As part of our constructions plan set, we would appreciate construction details for the following:

1. Duct bank detail (include conduit size, spacing, number of conduits, etc.)
2. Manhole structure (include specifications for the access cover, steps, etc.)

Our hope is that you will be able to attend the February 4th "Utility Meeting" and can bring this preliminary design for discussion. Enclosed are the plans for your use.

We appreciate your efforts and cooperation with this project. We also look forward to working with you and providing a system that can accommodate your futures needs for the development of the Bayside area.

If you have any questions during the interim, please do not hesitate to contact me by phone at 874-8848 or e-mail at awl@ci.portland.me.us.

Sincerely,

Anthony W. Lombardo

CITY OF PORTLAND
Anthony W. Lombardo, P.E., Project Engineer

WORK ORDER PLAN

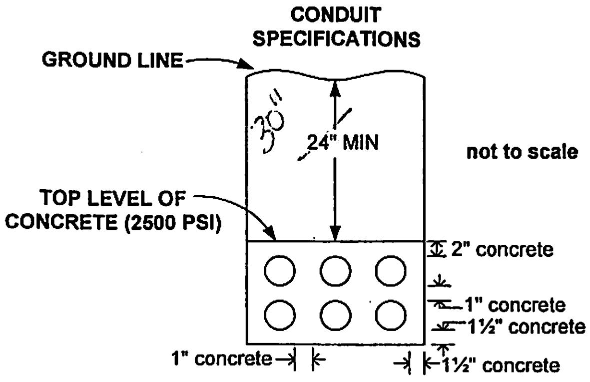
SOMERSET FUTURE TECHNOLOGY/BUSINESS PARK DEVELOPMENT

verizon

PREPARED BY SUE SARRETTE
OSP ENGINEER
207 797-1842
2/7/03

CONDUIT SPECIFICATION:

4" B PLASTIC DUCT
DUCT BANK DETAIL SEE BELOW



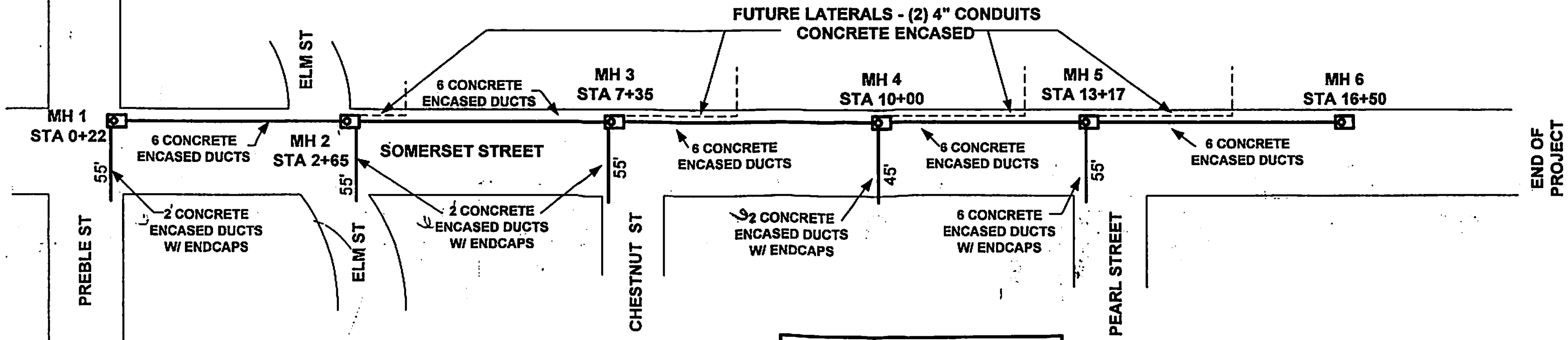
MANHOLE SPECIFICATION:

VERIZON'S STANDARD 4J MANHOLE - 6'-0"W X 12'0"L X 7'-0"H
12 TERMINATORS ON EACH OF 4 WALLS- TOP SECTIONS. 11
PULLING EYES AND INSERTS REQUIRED
SURFACE OF ROOF MUST HAVE A MIN OF ~~2~~ 30 COVER.
ATTACHED FIND 2 QUOTES FROM SUPPLIERS VERIZON USES -
SUPERIOR CONCRETE & PRECAST CONCRETE PRODUCTS OF MAINE.
COVERS NEED TO HAVE BELL LOGO.
VERIZON TO PROVIDE RACKING AND STEEL LADDER ONCE CABLING NEEDED

VERIZON REQUIRES THEIR CONTRACT WORK INSPECTOR TO BE PRESENT DURING INSTALLATION

UNDERGROUND UTILITY SEPARATIONS : SEE ATTACHMENT #1

NOTE:LATERALS WILL BE REQUIRED ONCE BUILDING LOCATIONS HAVE BEEN IDENTIFIED



NOTE: PEARL STREET WILL BE THE INITIAL FEED FOR THIS NEW SYSTEM.

NOT TO SCALE

Visio Pfld 2003 (Somerset)
no job#

PLACEMENT

Duct Arrangements

Duct Arrangements are subject to trench width and/or depth constraints imposed by terrain, the presence of other structures, required workman space, etc. The arrangement of ducts in a conduit run should be compatible with the manhole cable racking arrangement. (Refer to "Manholes" later in this section.) Generally, 2–, 3–, or 4–wide arrangements are preferred for single– or double–wall racking. Where a large number of ducts or other circumstances require center racking as well as wall racking, wider duct arrangements may be appropriate.

Separation From Other Structures

Practices 622–100–010, 622–300–205, NESC Rule 320, 919–000–100

The following separations are required for safety of personnel and for protection of telephone equipment:

Structure	Minimum Separation
Power or other foreign conduit	3–inch concrete 4–inch masonry 12–inch earth
Pipes (gas, oil) water, etc.)	6 inches when crossing 12 inches when parallel
Power conduit terminated on poles	Separate poles, if possible. If same pole, preferably 180°, but, not less than 90° F.
Railroads (except street railways)	Crossing: 5 feet below top of rail.* Terminating on poles: 12 feet from nearest rail, except 7 feet as sidings
Street railways	3 feet below top of rail.*

*Exception: Where impractical, or for other reasons, these clearances may be reduced; however, the top of the conduit or conduit protection shall in no case extend above the bottom of the ballast section which is subject to working or cleaning. Local requirements will prevail.

Spacing and Backfill Requirements

622–020–020
914–240–100
Practice 919–240–400

The next three pages show spacing and backfill requirements for single–bore conduit. The volume of concrete or granular backfill will vary with the trench width and the degree of irregularity of the trench surfaces. Volumes given for each arrangement are for the minimum trench width consistent with the specified clearances. Volumes for sand or granular backfill include an allowance of about 1/12 for compaction.

Precast Concrete Products of Maine, Inc.
Topsham, Maine 04086
Tel: 207-729-1629 Fax 207-729-8710
Tel:1-800-696-8265 (Maine)

QUOTATION

www.precastofmaine.com

TO: Verizon / Attn: Corey McDonald
BID DATE:
PROJECT: 38Y Telephone Manholes / ~~Kennebec~~ Somerset Street
LOCATION: Portland, ME.

Precast Concrete Products of Maine, Inc. proposes to furnish the following materials required for the above project, in accordance with the standards of the American Society for Testing Materials. The terms and provisions are agreed to and accepted by you upon acceptance of this proposal.

6 – 6' x 12' 38Y telephone manholes	$ 2300.00/ EA

Terminators, duct openings and pulling eyes cast in as required.
Cable racks provided by others.

6 – 32" diameter cast iron frames and covers marked TELEPHONE	$ 425.00 / EA

SALES TAX: Prices Quoted Do Not Include Sales Tax.
RETURNS: All returned product will be subject to a 15% re-stocking fee.
TERMS: 100% net within 30 days of delivery; Finance Charge of 2% per month (24% APR) will be applied to overdue invoices. There is no retainage. These terms apply to approved credit accounts in good standing. Contracts with others may be subject to additional terms to be established at the time of order. Date of invoice shall be date of shipment. Precast Concrete Products of Maine, Inc. retains security interest in its delivered product until final payment. Acceptance of this quotation by you and our written approval shall constitute a binding contract. This quote is valid for 30 days.

THE ABOVE PROPOSAL IS ACCEPTED	Precast Concrete Products of Maine, Inc.
BY:	BY: Paul A. Beers
DATE:	Date:2/4/03

Page 1 of 1

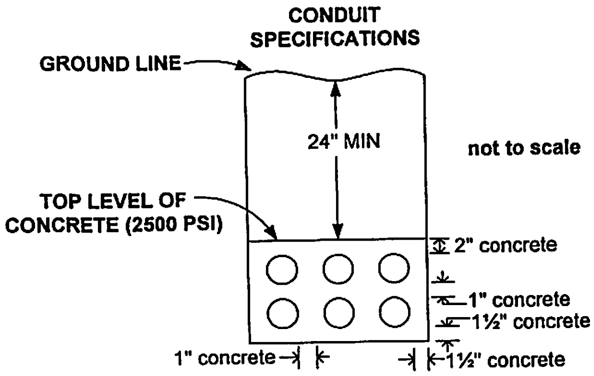
WORK ORDER PLAN

SOMERSET FUTURE TECHNOLOGY/BUSINESS PARK DEVELOPMENT

PREPARED BY SUE SARRETTE
OSP ENGINEER
207 797-1842
2/7/03

CONDUIT SPECIFICATION:

4" B PLASTIC DUCT
DUCT BANK DETAIL SEE BELOW



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12 TERMINATORS ON EACH OF 4 WALLS- TOP SECTIONS.
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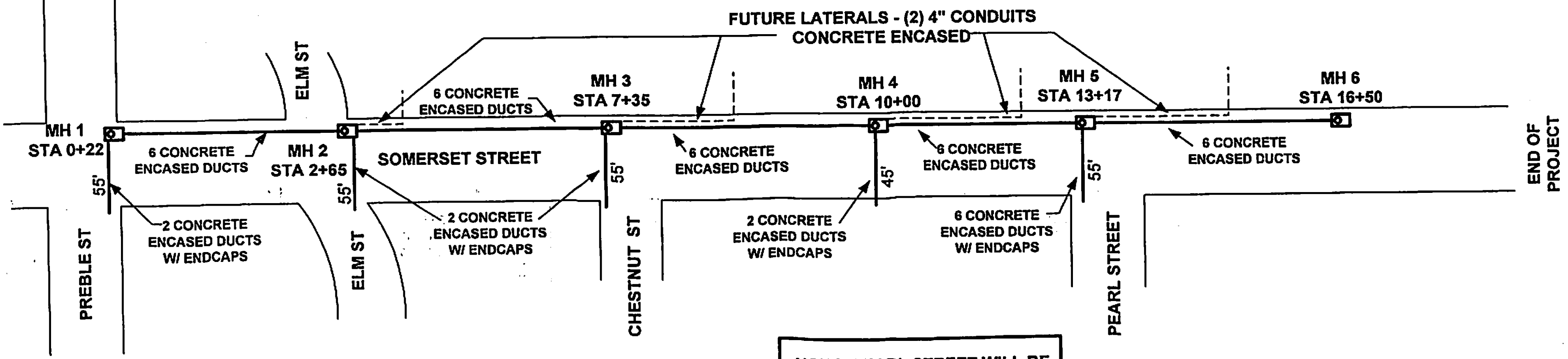
ATTACHED FIND 2 QUOTES FROM SUPPLIERS VERIZON USES -
SUPERIOR CONCRETE & PRECAST CONCRETE PRODUCTS OF MAINE.
COVERS NEED TO HAVE BELL LOGO.
VERIZON TO PROVIDE RACKING AND STEEL LADDER ONCE CABLING NEEDED

VERIZON REQUIRES THEIR CONTRACT WORK INSPECTOR TO BE PRESENT DURING INSTALLATION

UNDERGROUND UTILITY SEPARATIONS : SEE ATTACHMENT #1

NOTE:LATERALS WILL BE REQUIRED ONCE BUILDING LOCATIONS HAVE BEEN IDENTIFIED



NOTE: PEARL STREET WILL BE THE INITIAL FEED FOR THIS NEW SYSTEM.

NOT TO SCALE

Underground Utility Separations

The minimum recommended separation between telephone conduit systems and structures are as follows:

From Telephone Conduit

A. Electric power and other conduits - at least 3 inches of concrete, 4 inches of masonry or 12 inches of well tamped earth.

B. Other pipes - at least 6 inches of clearance when crossing and 12 inches when paralleling.

From Telephone Manholes

C. Power conduits - at least 3 inches of clearance from the outside surfaces of the manhole walls, floor or roof.

D. Other pipes - at least 12 inches of clearance.

The clearances in B and D are required to allow for the maintenance of the foreign structures. If they have to be reduced, they should be discussed with a responsible representative of the owning company. When telephone conduit is being planned close to gas, steam or water mains, it is more desirable to cross under them so that adequate room is provided to maintain the foreign structures.

Attachment #1

FYI

SUPERIOR CONCRETE CO
a division of Oldcastle Precast, Inc.

www.oldcastle-precast.com

P.O. Box 223
Auburn, ME 04212

Phone: (207) 784-9144
Fax: (207) 784-9647

Quotation Contract

February 5, 2003

Bid Date: February 5, 2003
Quote No: 11317-30131

COREY MACDONALD
VERIZON of MAINE
5 DAVIS FARM ROAD
PORTLAND, ME 04103

Dear COREY MACDONALD:

Superior Concrete Company is pleased to provide your company with the following quotation for:

PORTLAND, ME., VERIZON MANHOLES,

7 EA	PRECAST CONCRETE TELEPHONE MANHOLES MEASURING 6'-0" WIDE, x 12'-0" LONG, x 7'-0" HIGH INSIDE. MANHOLES PROVIDED WITH 4" TERMINATORS, PULL EYES, INSERTS, AND JOINT SEALANT.	2,400.00 / EA	16,800.00
EA	PRECAST CONCRETE 38Y RISER MEASURING 3'-0" ID x 12" HIGH @ $120.00/EA	/ EA	
EA	NEENAH MODEL R-1750-C TELEPHONE DESIGN LARGE MANHOLE FRAME & SOLID COVER WITH BELL LOGO @ $555.00/EA	/ EA	
		Total:	**$16,800.00**

Delivery

- Product will be delivered and set in your excavation providing our trucks can set up within 15 feet of the center point of the structure. If additional crane rental is necessary, it will be provided by others and at the expense of others.
- Delivery on weekdays during normal daylight hours, excluding holidays.

Terms

- Taxes not included.
- No retainage shall be deducted from payment.
- All Invoices are due and payable within thirty (30) days from date of invoice, **subject to purchaser's credit approval.**
- This Proposal shall be valid for 90 days from the date hereof.
- We must have a signed proposal or purchase order before we release your order to production.

Excludes

- UNLESS SPECIFICALLY STATED ABOVE, THIS PROPOSAL DOES NOT INCLUDE THE FOLLOWING:
- Permits.
- All items not specifically listed in this quote.
- All frames and covers.
- Excavation, backfill or compaction.
- Racking and associated equipment.

Production

- We currently have all (7) seven manholes in stock.

Materials

- Concrete Minimum Strength: 5000 psi @ 28 days, standard grey cement with local sand and aggregates.
- Steel Reinforcing: ASTM-A-615-85, Grade 60, Black.
- Design Loading: AASHTO HS20-44

If you have any questions, please call me at (207) 784-9144.

Matt Mosher 2/5/03

Accepted By Date

Matt Mosher Date

Sincerely,
Matt Mosher

IBERDROLA
USA

9/11/2013

William Hoffman
778 Main Street
Suite 8
South Portland, ME 04106
Email: WHoffman@fstinc.com

RE: Ability to Serve Letter for Midtown Project, Somerset Street, Portland, ME

Dear Mr. Hoffman:

CMP has the ability to serve your proposed project located along Somerset Street in Portland, Maine, in accordance with our CMP Handbook (web link below). We can provide you the desired pad, submersible or pole mounted transformers per your request and city approval, in accordance with our CMP Standards Handbook. If you have any questions on the process, or need help in completion of the documents, please feel free to contact our Portland Service Center.

New Service Milestones

- Call 1-800-565-3181 to establish a new account and an SAP work order.
- Submit any electronic drawings (PDF (preferred) or DWG files) of the site layout and proposed electrical connections if you have them.
- Preliminary meetings with CMP to determine the details of job
- Field planner design appointment to cost out job and develop CMP Invoice.
- Submit invoice for payment.
- Easements signed and payment received. Please note that the customer is responsible for obtaining all easements necessary to complete the work.
- Job scheduled for completion after the electrical inspection has been received.

This process can take several months, depending upon several factors including transformer delivery, potential substation upgrades, return of completed paperwork, and other jobs in the system that may be ahead of yours. In addition, contact with the other utilities, including telephone and cable, should be commenced as soon as practical. They may have additional work or charges in addition to the CMP work required to bring your project on line.

For your convenience, here is a link to the CMP Website which contains our Handbook with details on most service requirements:

162 Canco Road Portland, ME 04103
Tel (800) 750-4000
207-842-2367 office
207-458-0382 cell
207-626-4082 fax

www.cmpco.com

IBERDROLA
USA

CMP Handbook of Standard Requirements
(http://www.cmpco.com/MediaLibrary/3/6/Content%20Management/YourAccount/PDFs%20and%20Docs/handbook.pdf)

If you have any questions, please contact CMP at 1-800-565-3181.

Regards,

Jamie Cough

Jamie Cough
Energy Services Advisor
Central Maine Power Company
162 Canco Road
Portland, ME 04103
207-842-2367 office
207-458-0382 cell
207-626-4082 fax

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Department of Public Services,
55 Portland Street,
Portland, Maine 04101-2991

Date: ____________________

Mr. Frank J. Brancely,
Senior Engineering Technician,
Phone #: (207) 874-8832,
Fax #: (207) 874-8852,
E-mail:fjb@portlandmaine.gov

1. Please, Submit Utility, Site, and Locus Plans.

Site Address: Lots located on Elm and Somerset Streets

(Regarding addressing, please contact Leslie Kaynor, either at 756-8346, or at LMK@portlandmaine.gov)

Chart Block Lot Number: 034 D003; D010; D009 025 A022; B002; B003; B004; B005

Proposed Use: Please see attached sheet

Previous Use: Industrial

Existing Sanitary Flows: 0 GPD

Existing Process Flows: 0 GPD

Description and location of City sewer, at proposed building sewer lateral connection:

Existing sewer is 36" to 72"diameter - See attached sketch

Clearly, indicate the proposed connection, on the submitted plans.

Site Category

Commercial X

Industrial *(complete part 4 below)* ___

Governmental ___

Residential ___

Other *(specify)* X

(mixed-use)

2. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 170,000 GPD

Peaking Factor/ Peak Times: 3.5 - typical diurnal flow of residential uses

Specify the source of design guidelines: *(i.e.* x *"Handbook of Subsurface Wastewater Disposal in Maine,"* __ *"Plumbers and Pipe Fitters Calculation Manual,"* __ *Portland Water District Records,* _ *Other (specify)*

Note: Please submit calculations showing the derivation of your design flows, either on the following page, in the space provided, or attached, as a separate sheet. (see attached spreadsheet)

3. Please, Submit Contact Information.

Owner/Developer Name: The Federated Companies c/o Greg Shinberg

Owner/Developer Address: Shinberg Consulting-477 Congress Street, Suite 1012 Portland, Maine 04101

Phone: 207-653-7510 Fax: 207-772-7080 E-mail: gls@shinbergconsulting.com

Engineering Consultant Name: William G. Hoffman, P.E., DeLuca-Hoffman Associates, Inc.

Engineering Consultant Address: 778 Main Street, Suite 8, South Portland, ME 04106

Phone: 207-775-1121 Fax: 207-879-0896 E-mail: whoffman@delucahoffman.com

City Planner's Name: Rick Knowland Phone: 207-874-8725

Note: Consultants and Developers should allow +/- 15 days, for capacity status, prior to Planning Board Review.

4. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated: ____________ GPD

Do you currently hold Federal or State discharge permits? Yes ____ No ____

Is the process wastewater termed categorical under CFR 40? Yes ____ No ____

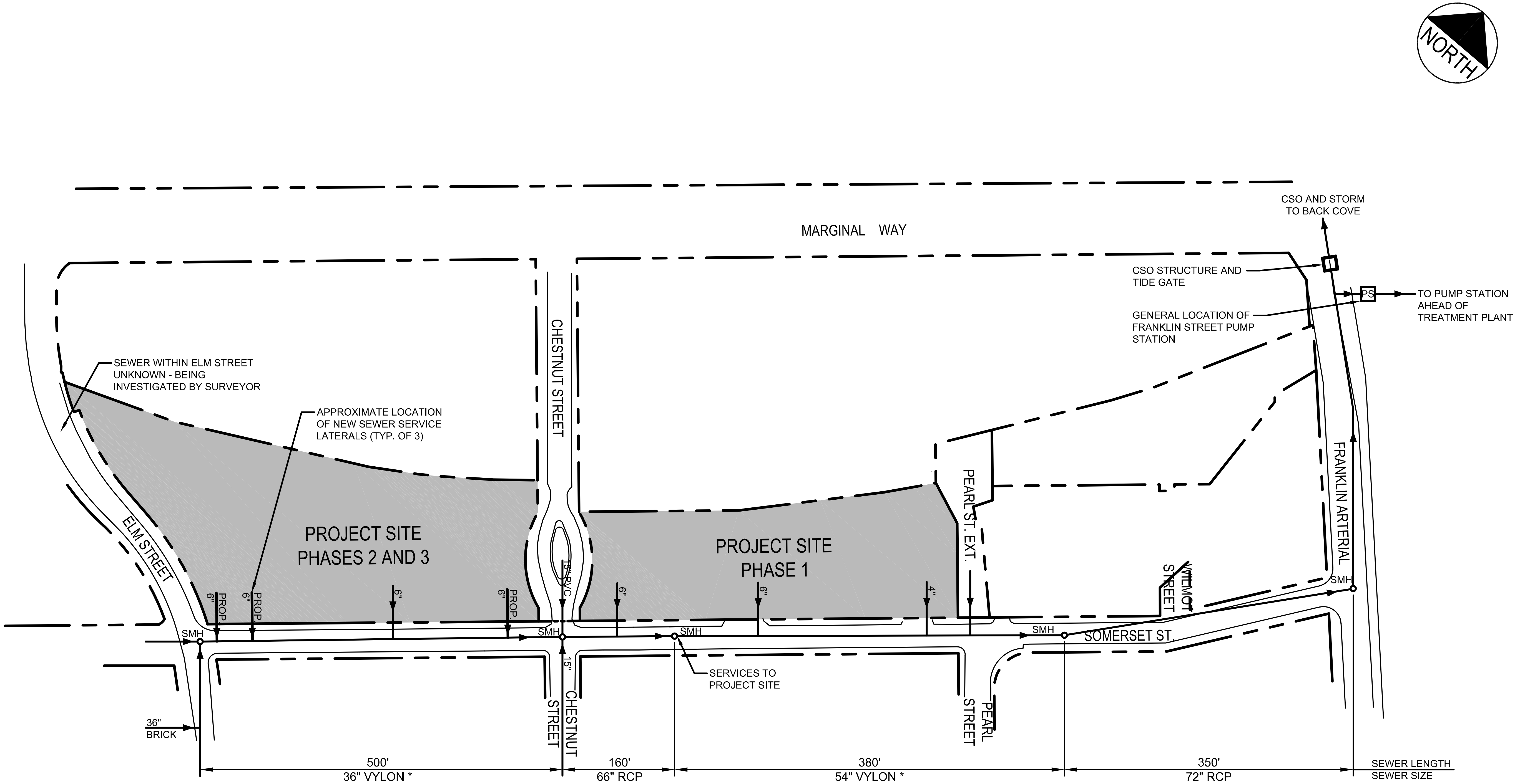
OSHA Standard Industrial Code (SIC): *(http://www.osha.gov/oshstats/sicser.html)*

Peaking Factor/Peak Process Times: ____________

Note: On the submitted plans, please show the locations, where the building's sanitary, and process water sewer laterals, exit the facility, where they enter the city's sewer, the location of any control manholes, wet wells, or other access points, and the locations of any filters, strainers, or grease traps.

Notes, Comments, or Calculations:

The proposal is for mixed-use development with residential units above the first floor, retail or commercial uses on the ground floor, and off-street parking garages. The sanitary sewer along Somerset Street will be used for lateral connections. The applicant will use existing laterals for the connections to the extent possible and likely add two or three new services. Refer to Figures 1 and 2 for a schematic of the sewer system and lateral connections.



THE 2003 CSO PROJECT INCLUDED THE INSTALLATION OF THREE 6" AND ONE 4" SEWER LATERALS TO SERVE THE PROJECT SITE

THREE NEW SERVICE LATERALS ARE PROPOSED

* INSTALLED IN 2003

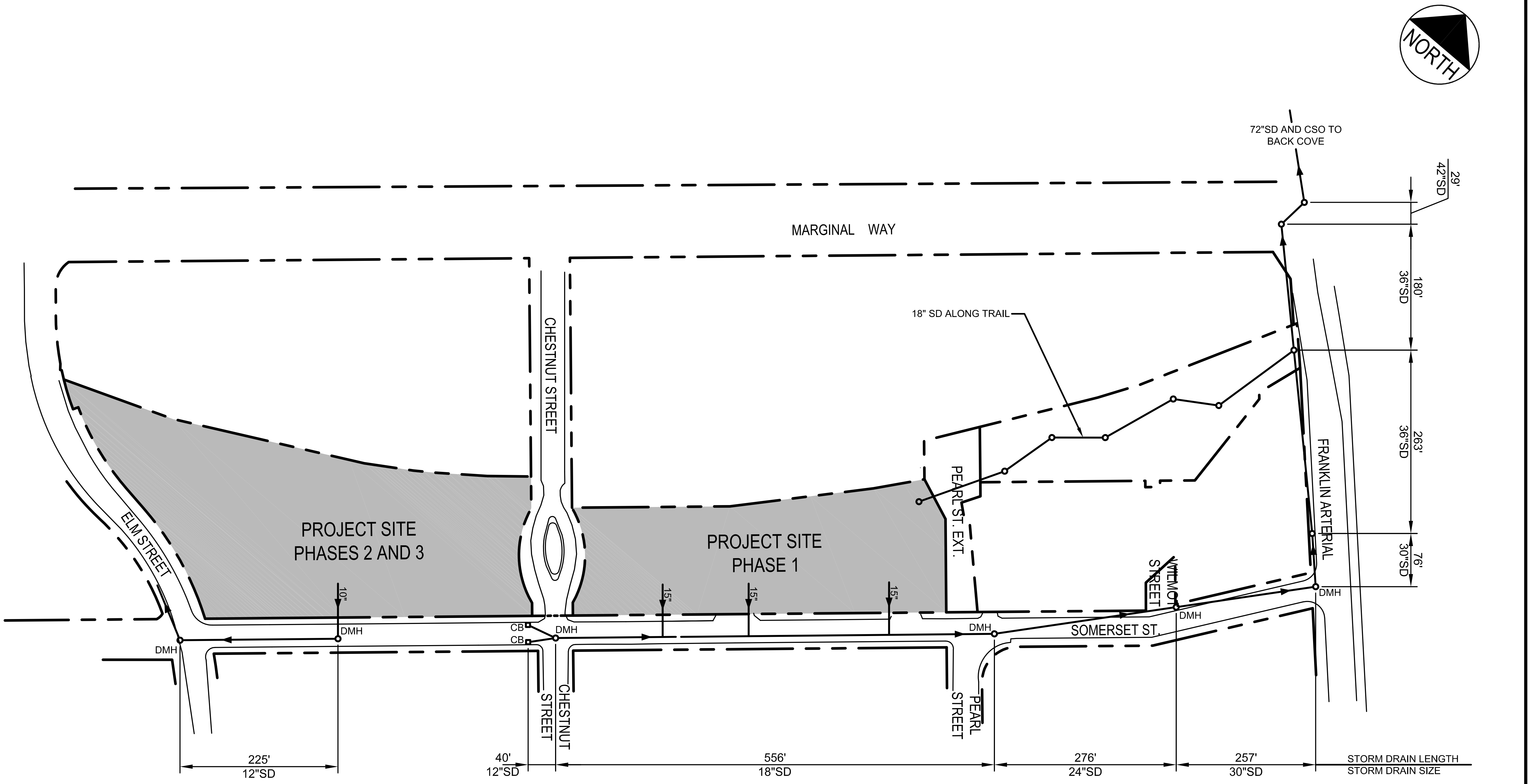
DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207.775.1121
WWW.DELUCAHOFFMAN.COM

DRAWN:	LA	DATE:	10.26.12
DESIGNED:	WGH	SCALE:	N.T.S.
CHECKED:	WGH	JOB NO.	3062
FILE NAME:	3062-PERMITS		

midtown
PROJECT

SANITARY SEWER SCHEMATIC
ALONG SOMERSET STREET

FIGURE
S-1
REVISED 12.20.12



THE 2003 CSO PROJECT INCLUDED THE INSTALLATION OF THREE 15" AND ONE 10" SD LATERALS TO SERVE THE PROJECT SITE

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207.775.1121
WWW.DELUCAHOFFMAN.COM

DRAWN:	LA	DATE:	10.26.12
DESIGNED:	WGH	SCALE:	N.T.S.
CHECKED:	WGH	JOB NO.	3062
FILE NAME:	3062-PERMITS		

midtown
PROJECT

STORM DRAIN SCHEMATIC ALONG SOMERSET STREET

FIGURE
S-2
REVISED 12.19.12

UTILITY LEGEND

🟩	COMMUNICATIONS
🟦	ELECTRICITY
🟧	GAS
🟪	SEWER
🟩	STORM DRAIN
🟦	WATER MAIN

UTILITY NOTE:

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEY FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. CALL 1–800–DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.

LEGEND

⊡	MONUMENT FOUND	—×—×—	FENCE
◎	IRON PIPE OR ROD FOUND	— 10 —	1' CONTOUR
	HYDRANT	— – —	OVERHEAD WIRES
WV ⋈	WATER VALVE	— W —	WATER LINE
	UTILITY POLE	— S —	SEWER LINE
☼	LIGHT POLE		DECIDUOUS TREE
○	MANHOLE	⊕	MONITORING WELL
▤ ⊜	CATCH BASIN		
—o—	SIGN		

GRAPHIC SCALE

0 20' 40' 80'

PLAN REFERENCES:

1. "SUBDIVISION RECORDING PLAT OF PROPERTY LOCATED ON BAYSIDE RAILWAY, PORTLAND, MAINE PREPARED FOR DOWNTOWN PORTLAND CORPORATION" DATED OCTOBER 30, 2008 REV. 3 1/13/09 BY SGC ENGINEERING, LLC RECORDED IN C.C.R.D. PLAN BOOK 209 PAGE 36.

2. "EXISTING CONDITIONS SURVEY OF PROPERTY LOCATED ON SOMERSET STREET, PORTLAND, MAINE PREPARED FOR CITY OF PORTLAND" DATED OCTOBER 30, 2008, REV. 1 10/20/11 BY SGC ENGINEERING, LLC.

3. "STANDARD BOUNDARY SURVEY FOR BAYSIDE TRAIL & PROPOSED SOMERSET STREET EXTENSION" DATED SEPTEMBER 2012 PREPARED BY CITY OF PORTLAND, MAINE PUBLIC SERVICES DEPARTMENT ENGINEERING DIVISION.

NOTES:

1. OWNER OF RECORD: CITY OF PORTLAND, C.C.R.D. BOOK 27870 PAGE 299.

2. BASIS OF BEARINGS: MAINE STATE PLANE COORDINATE SYSTEM WEST ZONE NAD83.

3. ELEVATIONS ARE BASED ON CITY DATUM. BENCH MARK: MDOT DISK "612–(1)–10 1983"

4. THIS PLAN IS THE RESULT OF A FIELD SURVEY CONDUCTED BY OWEN HASKELL, INC. NOVEMBER 2012 AND DATA TAKEN FROM PLAN REFERENCE 2 AS SHOWN ABOVE.

CERTIFICATE:

OWEN HASKELL, INC. CERTIFIES THAT THIS PLAN IS BASED ON, AND THE RESULT OF, AN ON THE GROUND FIELD SURVEY AND THAT TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, IT CONFORMS TO THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS CURRENT STANDARDS OF PRACTICE.

DATE

JOHN W. SWAN, PLS NO. 1038

BOUNDARY & TOPOGRAPHIC SURVEY
ON
SOMERSET STREET, PORTLAND, MAINE
MADE FOR
DELUCA HOFFMAN ASSOCIATES
MAIN STREET, SOUTH PORTLAND, MAINE

OWEN HASKELL, INC.
390 U.S. ROUTE ONE, FALMOUTH, ME 04105 (207) 774–0424
PROFESSIONAL LAND SURVEYORS

Drwn By	RS	Date NOVEMBER 9, 2012	Job No. 12012–180 P
Trace By	JLW		
Check By	JWS	Scale 1" = 40'	Drwg. No. 1
Book No.	FILE		

PORTLAND MAINE

Strengthening a Remarkable City, Building a Community for Life • www.portlandmaine.gov

Public Services Department
Michael J. Bobinsky, Director

CORRECTED COPY

4 October 2013

Mr. William G. Hoffman, P.E.,
Fay, Spofford & Thorndike,
778 Main Street, Suite 8,
South Portland, Maine 04106

RE: The Capacity to Handle Wastewater Flows, from "midtown," the Mixed Use (Residential, Retail, Parking Garage) Development Towers Proposed by Federated Companies, along The Northern Side of Somerset Street (23-63 Somerset), between Pearl Street Extension and Chestnut Street (Phase 1) and Continuing along The Northern Side of Somerset Street (69-105 Somerset), from Chestnut to Elm Street (Phases 2 and 3) including (127-161 Elm Street).

Dear Mr. Hoffman:

It has come to my attention that this project, formerly known as "Maritime Landing," is now known as "midtown." This letter corrects the name of the project and supercedes the letter of 2 October 2013.

The existing thirty-six inch, fifty-four inch, and sixty-six inch reinforced concrete sewer pipes, located in Somerset Street, have adequate **capacity to transport,** while The Portland Water District sewage treatment facility, located off Marginal Way, has adequate **capacity to treat,** the total anticipated increase in wastewater flows of **171,110 GPD**, from the proposed mixed use development towers.

The City combined sewer overflow (C.S.O.) abatement consent agreement (with the U.S.E.P.A., and with the Maine D.E.P.) requires C.S.O. abatement, as well as storm water mitigation, in order to offset any increase in sanitary flows, from all projects. If the City can be of further assistance, please call 874-8832.

Sincerely,
CITY OF PORTLAND

Frank Brancely

Frank J. Brancely, B.A., M.A.
Senior Engineering Technician

FJB

C:\Frank's\Capacity Letters\Somerset Street 23-105 & Elm Street 127-161
O:\Engshare\FJB\Capacity Letters\Somerset Street 23-105 & Elm Street 127-161

Anticipated Increase in Wastewater Flows from the Proposed Residential, Retail, Restaurant and Parking Garage Units

The Proposed Residential Units:
800 Proposed Units @ 180 GPD/Unit = 144,000 GPD

The Proposed Retail Outlets:
75 Proposed Employees @ 12 GPD/Employee = 900 GPD
8 Proposed Toilets @ 325 GPD/Toilet = 2,600 GPD

The Proposed Restaurants:
900 Proposed Seats @ 25 GPD/Seat = 22,500 GPD

The Proposed Parking Garages:
1,110 Proposed Spaces @ 1GPD/Space = 1,110 GPD
Total Wastewater Design Flow, from the Proposed Mixed Use Project: = 171,110 GPD

Total Anticipated Increase in Wastewater Flows for this Project = 171,110 GPD

CC:
Jeffrey Levine, Director, Department of Planning, and Urban Development, City of Portland
Barbara Barhydt, Development Review Services Manager, Department of Planning, and Urban Development, City of Portland
Rick Knowland, City Planner, Department of Planning, and Urban Development, City of Portland
David Margolis-Pineo, Deputy City Engineer, City of Portland
Michael Farmer, P.E., Project Engineer, City of Portland
Bradley A. Roland, P.E., Environmental Projects Engineer, City of Portland
John Emerson, Wastewater Coordinator, City of Portland
Rhonda Zazzara, Field Inspection Coordinator, City of Portland
Harold Downs, Senior Wastewater Technician, City of Portland
Jane Ward, Administrative Assistant, City of Portland

EXHIBIT 6

FIRE DEPARTMENT REVIEW & LIFE SAFETY PLAN INFORMATION

November 6, 2014
Revised November 13, 2014

Capt. David Petruccelli
City of Portland
Fire Department Prevention & Education
380 Congress Street
Portland, ME 04101

Subject: **"midtown" Project – Portland, ME**
Fire Department Site Review Checklist

Dear Captain Petruccelli:

In accordance with instructions in the City's Level III Site Plan Review packet, enclosed please find the drawings necessary for your review of the proposed "midtown" project. We have listed each item in your checklist below, followed by our response.

1. *Name, address, telephone number of applicant.*

The Federated Companies
Attn: Nick Wexler
3301 NE 1st Avenue, Suite M-302
Miami, FL 33137-4110

2. *Name, address, telephone number of architect.*

Project Architect: CBT Architects
Attn: Mr. David Hancock
110 Canal Street
Boston, MA 02114

3. *Proposed uses of any structures.*

Parking Garage-midtownTwo	**IBC Code**	**NFPA Code**	**Sprinkler**
First Floor Retail	Mercantile/IA	New Mercantile/II (000)	NFPA 13
Floors 2-7 Open Parking Structure	Storage-2/IIB	Storage/II (000)	N/A

Residential Building – midtownOne, midtownThree, midtownFour	**IBC Code**	**NFPA Code**	**Sprinkler**
First Floor Lobby & Leasing	R-2/IA	New Apartment/II(032)	NFPA 13
First Floor Retail	Mercantile/IA	New Mercantile/II(030)	NFPA 13
Floors 2-6 Residential Apartments	R-2/IIIB	New Apartment/II(032)	NFPA 13

4. *Square footage of all structures (total and per story).*

Building Name	No. of Stories	Total Gross ARBA (SF)	Gross Floor Area (SF)
midtownOne	6	90,600	16,200
midtownTwo	7	266,500	38,000 (parking)
midtownThree	6	289,000	48,200
midtownFour	6	69,000	11,500

5. *Elevation of all structures.*

The finish floor for the buildings and parking garage will be Elevation 12. The three residential buildings will be about 72 feet height; the garage building is 7 stories including 1 floor of retail and parking on the top deck; it will be 92 feet in height.

6. *Proposed fire protection of all structures.*

The occupied mercantile and residential spaces will all be sprinkled; the garage will not be sprinklered but will be provided with dry standpipes in the stairwells.

7. *Hydrant locations.*

Hydrant locations are shown on Drawing C-4.0. This includes a relocated hydrant on Pearl Street Extension and a new hydrant on Elm Street. MidtownOne will have a fire department standpipe connection on Pearl Street Extension near the apartment entry. Building two has wet sprinklers in retail space, and dry standpipes in stair towers, so we show two FDC's -- the one to the east next to the parking entrance would serve the sprinkler system and the standpipe in the north east stair tower, the one to the west along Somerset near Chestnut Street would serve the standpipe in the southwest stair. Building three has two upper level residential buildings over a common podium level. The two upper buildings are entered through a common lobby. We show 2 FDC's – one near the common residential lobby entry, and the other near the west end of the retail façade. We assume these two are interconnected internally. MidtownFour will have a fire department connection near the apartment entrance accessible from Elm Street. Fire Department connections will be provided in accordance with Code requirements.

8. *Water main(s) size and location.*

The Portland Water District maintains a 16-inch line in Somerset Street. An 8-inch line looped between the 16-inch main in Somerset Street and a 6-inch main in Preble Street.

9. *Access to all structures (min. 2 sides).*

The structures will be accessible from two sides, which will have major access from Somerset Street. Access for emergency vehicles could occur on the trail, which was designed with a 16-foot section and reportedly designed for fire apparatus loads. (Confirmation of the basis of design should be verified by the City of Portland).

10. *A code summary shall be included referencing NFPA 1 and all fire department technical standards.*

NFPA 1 – Chapter 18 Fire Department Access and Water Supply

18.2 Fire Department Access:

The streets in the area have 12-foot travel lanes and a minimum pavement width of 24 feet. The pavement expands to 32 feet in areas with designated deliveries and parking. The applicant will be constructing a driveway from Somerset Street on Pearl Street Extension. The width of this driveway varies from 21 to 24 feet.

Per NFPA 1 – Chapter 18.2.3.2.2.1, all first story floors shall be located not more than 450 ft. from a Fire Department access road.

City of Portland Technical Manual – Section 3 Public Safety

3.4.1 Every dead-end roadway more than one hundred fifty (150') feet in length shall provide a turnaround at the closed end. Turnarounds shall be designed to facilitate future street connectivity and shall always be designed to the right (refer to Figure I-5).

Supporting Evidence: The applicant is proposing Pearl Street Extension as a driveway. The City of Portland may construct this as a through street between Somerset and Marginal Way sometime in the future. The City would need to acquire additional property in the future in order to construct Pearl Street Extension as a public street. The length of driveway was reviewed with the City and changes incorporated to address this comment.

3.4.2 Where possible, developments shall provide access for Fire Department vehicles to at least two sides of all structures. Access may be from streets, access roads, emergency access lanes, or parking areas.

Supporting Evidence: The buildings are accessible on two sides except for:

- midtownOne which will have a 21 to 24 foot driveway in the Pearl Street Extension Right-of-Way and access for emergency vehicles along the trail; and

- midtownFour which has trail access on both sides of the building.

3.4.3 Building setbacks, where required by zoning, shall be adequate to allow for emergency vehicle access and related emergency response activities and shall be evaluated based on the following factors:

- *Building Height*
- *Building Occupancy*
- *Construction Type*
- *Impediments to the Structures*
- *Safety Features Provided*

Supporting Evidence: Refer to the Site Plans, Utility Plans and information provided herein.

3.4.4. Fire Dept. access roads shall extend to within 50' of an exterior door providing access to the interior of the structure.

Supporting Evidence: The public streets and building locations will allow an emergency vehicle to pull within less than 50 feet of the structures.

3.4.5. Site access shall provide a minimum of nine (9) feet clearance height to accommodate ambulance access.

Supporting Evidence: There are no planned obstructions to the vertical access.

3.4.6. Elevators shall be sized to accommodate an 80 x 24 inch stretcher.

Supporting Evidence: The building designs meet this requirement.

3.4.7. All structures are required to display the assigned street number. Numbers shall be clearly visible from the public right of way.

Supporting Evidence: The applicant will work with the City's Public Services Division to assign street addresses and numbering to meet City Standards.

If you need any further information, please contact our office.

Sincerely,

FAY, SPOFFORD & THORNDIKE

Stephen Bushey

Stephen R. Bushey, P.E.
Senior Principal Engineer

SRB/cmd

Enclosure

c: w/o enc: Nick Wexler
David Hancock

THIS PLAN IS PRELIMINARY IN NATURE. THE EXACT LOCATION OF UTILITY SERVICES TO THIS PROJECT ARE SUBJECT TO REVISIONS RESULTING FROM FUTURE COORDINATION WITH THE MEP ENGINEERS FOR THE FOUR midtown BUILDINGS.

FIRE HYDRANT STANDARDS

1. ALL DEVELOPMENT SHALL HAVE A HYDRANT WITHIN FIVE HUNDRED (500') FEET OF ALL STRUCTURES.
2. ALL HYDRANTS, PRIVATE AND PUBLIC, SHALL COMPLY WITH CITY CODE CHAPTER 10 AND THE PORTLAND WATER DISTRICT STANDARDS.
3. ALL HYDRANTS ARE PROPOSED TO BE PWD (PUBLIC) HYDRANTS.
4. EXISTING HYDRANT FLOW DATA:

HYDRANT LOCATION:	SOMERSET STREET OPPOSITE PEARL ST.
HYDRANT NUMBER:	POD HYD 01864
LAST TESTED:	6.22.2006
STATIC PRESSURE:	112 PSI
RESIDUAL PRESSURE :	108 PSI
FLOW :	2,846 GPM

NOTE: SANITARY SEWERS TO BE SDR 35 WITH WATERTIGHT JOINTS

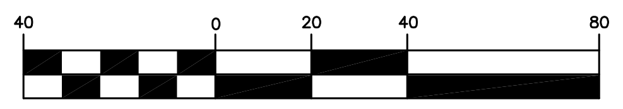
THIS DRAWING IS INTENDED TO BE PLOTTED AND VIEWED IN COLOR.

BLACK AND WHITE PLAN NOT SUITABLE FOR REVIEW

LEGEND

W	PROPOSED WATER LINE
SAN	PROPOSED SANITARY SEWER LINE
G	PROPOSED NATURAL GAS LINE
UGE	PROPOSED UNDERGROUND ELECTRIC LINE
UGT	PROPOSED UNDERGROUND TELEPHONE LINE
COM	PROPOSED UNDERGROUND COMMUNICATION LINE
OHE	PROPOSED OVERHEAD ELECTRIC LINE
T	PROPOSED TRANSFORMER PAD

GRAPHIC SCALE



(IN FEET)
1 inch = 40 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
1	11.14.14	FINAL LEVEL III SUBMISSION TO CITY OF PORTLAND

REVISIONS

STATE OF MAINE
WILLIAM R. MOORE
13547
LICENSED
PROFESSIONAL ENGINEER
William R Moore
11/14/14

P.E. WILLIAM R. MOORE
LIC. # 13547

PROJECT
midtown
PORTLAND, MAINE

SHEET TITLE
OVERALL UTILITY PLAN

CLIENT
THE FEDERATED COMPANIES

FST
100 YEARS
FAY, SPOFFORD & THORNDIKE
ENGINEERS · PLANNERS · SCIENTISTS
778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106
FORMERLY DELUCA-HOFFMAN ASSOCIATES

DRAWN:	KEW/DED	DATE:	OCTOBER 2014
DESIGNED:	WGH/BEK	SCALE:	1" = 40'
CHECKED:	WGH/SRB	JOB NO.	SP-M037B
FILE NAME:	3062-UTIL		
SHEET	C-4.0		

FIRE RISK MANAGEMENT, INC

1 Front St., Bath, ME 04530
207/442-7200 [207/221-1295 (fax)]
www.fireriskmgt.com

Date: 13 November, 2014

Memo Report

From: W. Mark Cummings, P.E.

To: Mr. Bo Kennedy; Fay, Spofford, & Thorndike, Inc. (FST)
CC: Mr. Steve Bushey; FST

Subject: **Fire Protection Review of Site Plans, ICW the Midtown Project in Portland, ME**

As requested, Fire Risk Management, Inc. (FRM) reviewed the information you provided with regards to the overall site plan for the new Midtown development in Portland, ME. The focus for this review was to evaluate the fire protection features of the general layout for the development to ensure that all State and Municipal codes, regulations, and ordinances are adequately addressed.

The primary codes and regulations used as reference for this review included;

1. The City of Portland Code of Ordinances; primarily Chapter 10, *Fire Prevention and Protection,* (Rev. 1-20-11),
2. City of Portland Technical Manual, Section 3 – Public Safety, (Rev. 6/17/11), and
3. National Fire Protection Association's *Fire Code*® (NFPA 1, 2012 ed.).

For this review, the primary areas of interest are to ensure that an adequate water supply is available; including location and spacing of fire hydrants within the vicinity of the new development, and that proper access to the various structures by firefighting equipment and personnel is available.

The proposed plan for adding and modifying the locations of hydrants in the vicinity of the Midtown development appear to be compliant with the requirements of both the City of Portland and NFPA 1. The plan for providing adequate access to fire hydrants includes;

1. Providing an additional hydrant off the north side of Elm Street, between Midtown Four and Three,
2. Slightly relocating the existing hydrant along Somerset Street, adjacent to Midtown Three, to allow for an increase in the street width,
3. The relocation of the existing hydrant at the corner of Somerset and Chestnut Streets to a new location further west on Chestnut Street, adjacent to the southwest corner of Midtown Two,
4. Providing an additional hydrant along Somerset Street adjacent to Midtown Two, and
5. Relocating the existing hydrant at the corner of Somerset and Pearl Streets to a location on the northwest corner of Somerset Street and the (new) Pearl Street extension.

The planned hydrant locations are included on the Overall Utility Plan for the project; drawing C-4.0. Although the fire hydrant flow test data that are provided on the Utility Plan were obtained in 2006, these data are indicative of the general capabilities of Portland's municipal water supply system. Once the new hydrants are installed, it will be necessary to confirm the adequacy of the municipal water supply to meet the fire flow requirements for the new development.

Based on the construction classifications listed for the Midtown buildings on the FST letter to the City of Portland, dated 5 November, 2014, the municipal water supply will be required to support the fire flow requirements for the "worst-case" scenario involving one of the buildings within this development. In this instance, it will be the building with the largest total floor area, Midtown Three, using requirements for Type III construction; per NFPA 1. The construction plans for this development call for all buildings to be fully protected with automatic fire sprinkler systems. Based on the fire flow area for Midtown Three, along with the use of a Type III (unprotected) construction, a minimum fire flow demand of

8000 gpm for four (4) hours would be required. However, given that the buildings are to be fully sprinklered, this flow value can be reduced by 75%; to 2000 gpm. Hence, the municipal water supply system will be expected to provide at least 2000 gpm for a minimum of 4 hours. Based on the hydrant flow test data and the fact that this development is served by a 16" supply main, it is considered very likely that the supply system will easily support this level of flow at the minimum residual pressure of 20 psig, which is defined as being needed to support "fire flow" requirements.

Based on the total fire flow demand, NFPA 1 (Annex E) indicates that at least two (2) hydrants be provided, at a maximum spacing of 450 ft between each hydrant, as measured along the fire department access road(s). However, due to the size of the development, along with other requirements, five hydrants are to be located in the vicinity of this development to ensure that all firefighting capability requirements are met.

The level of detail provided for the individual buildings is such that the specific locations for the fire department connection (FDCs) for each building cannot be determined as part of this review. However, each building will be required to have at least one FDC that is readily accessible to the responding fire department. Previously, the City of Portland has required that the FDC be located such that it is within 100 ft of a hydrant. It must be verified if the City intends to continue to impose this requirement on new construction. Additionally, it should be verified as to the preferred type of FDC to be used. Depending on the size of the building(s) involved, the City has requested the use of either a "Siamese" type (two 2½-inch connections) or, for larger buildings, a single 5-inch storz connection.

NFPA 1 requires that any portion of a building, or the exterior walls of the building, can be no more than 450 ft from an access road, when the building is fully protected by an automatic sprinkler system. The proposed hydrant locations shown on Dwg. C-4.0 were specifically designed to ensure compliance with this requirement. NFPA 1 also requires that at least one exterior door, which can be accessed (opened) from the exterior and provides direct access to the building's interior, be provided within 50 ft. of an access roadway for each building. The drawings provided for this review do not provide a level of detail for the individual buildings that would include locations for exterior doorways. However, based on the availability of access to at least three sides of each building, it is likely that this requirement will be met.

Chapter 10 of the Portland City Ordinances also has a requirement that, where available, the fire department vehicles should have access to at least two (2) sides of each building. Based on the current site plan provided, it will be possible for all buildings to be accessed from at least two sides.

Based on the information provided, the proposed site plan for the Midtown development appears to comply with all applicable State (National) and City fire code requirements. Should there be any questions regarding this assessment and the recommendations contained herein, please do not hesitate to contact me.

W. Mark Cummings, P.E.
Principal Engineer

EXHIBIT 7

STATE AND FEDERAL PERMIT REQUIREMENTS

STATE AND FEDERAL PERMIT REQUIREMENTS

Work in the project area will proceed after the City of Portland confirms environmental remediation activities conducted under the auspices of the State of Maine's Voluntary Remedial Action Plan (VRAP) are complete. The project will need to conform to the VRAP or modify it and secure regulatory approval for any deviations.

The project will require a Maine Department of Transportation Traffic Permit and a MeDEP Site Location of Development Permit (including the Stormwater Permit, and Maine General Construction Permit). The City of Portland has delegated review authority for projects which require Site Location of Development Permits from the MaineDEP and the Traffic Permit from MaineDOT.

The project may also require a MaineDEP Air Emissions Permit. The Owner's mechanical engineers have not yet developed the projection of BTU's which will be required to support the energy needs of this project. Once the projection of BTU's is made, the need for an air emissions permit can be assessed.

There are no federal permits identified by the City of Portland, the project team, or the owner as being required for the project. Copies of permits from State officials not issued under delegated review will be provided to the City Planning Staff upon receipt.

EXHIBIT 8

CONSTRUCTION MANAGEMENT PLAN

midtown Construction Management Plan

The midtown construction project will be managed by a project team located in PC Construction's Portland, Maine, office. Day-to-day project oversight will be conducted by field staff and various support personnel who will be on site throughout the duration of construction.

The project involves construction of three, six-story buildings each comprising concrete ground-floor retail space topped with five stories of wood-frame apartments; and a seven-story, approximately 800-space precast concrete parking structure, also with ground-floor retail space. Additionally, the overall project involves raising and rebuilding approximately 1,000 feet of Somerset Street between Elm Street and Pearl Streets; 150 feet of Pearl Street; 200 feet of Chestnut Street; and 500 feet of the Bayside Trail.

The midtown project construction approach is to work on all the structures and street raisings concurrently in a single phase. In order to keep pedestrians, neighbors and adjacent businesses safe and segregated from construction activities, the project team proposes detouring Somerset Street and Bayside Trail pedestrian and vehicular traffic around the project site. This will be accomplished by using:

- Crosswalks
- Signage
- Education
- Coordination
- Temporary surfaces

Additionally, the project team plans to erect construction fencing around the entire project site. The proposed location of the construction trailers and office will be inside the fence and out of the way of construction. The laydown area for construction will be adjacent to the work in any open spaces inside the fence and, as needed, at offsite locations. Excess contractor parking will be located offsite.

Key issues to be addressed include:

- Public safety
- Coordination with the City of Portland, neighbors and utilities
- Bayside Trail, pedestrian and vehicular traffic detours and management
- Groundwater control/treatment
- Waste management and site clean-up
- Coordination of material deliveries
- Material laydown/storage, office trailers and contractor parking
- Dust and erosion control
- Clean streets surrounding the project
- Construction entrances

EXHIBIT 9

TRAFFIC REPORT

DRAFT

TRAFFIC IMPACT STUDY SUPPLEMENT

Midtown Development
105 Somerset Street
Portland, Maine

Prepared for
The Federated Companies
3301 NE 1st Avenue, Suite M-302
Miami, FL 33137-4110

Prepared by

Fay, Spofford & Thorndike, LLC
Engineers ● Planners ● Scientists
Portland, Massachusetts

November 2014

Table of Contents

List of Figures

List of Tables

1.0 OVERVIEW

1.1 Executive Summary

The Federated Companies has retained Fay, Spofford & Thorndike, LLC, (FST) to provide a supplement to the original Traffic Impact Study that was submitted on April 22, 2013 for the proposed Midtown Development to be located at 105 Somerset Street in Portland, ME.

The original Traffic Impact Study was completed for a development that consisted of 664 residential units (544 residential apartments, 120 residential condominiums) as well as 100,000 sf of retail space. The current proposal is smaller and consists of 440 residential apartment units along with 87,200 sf of retail development.

Since the size of the development will be DECREASING, the amount of traffic to be generated by the project will decrease from the original study. This supplement has been prepared to present the changes due to the project. Therefore, this supplement only provides a discussion of the elements of the original study that have changed.

Similar to the original development, the proposed development will consist of a multiuse site composed of apartments, retail space and garage level parking. No turning lanes are required along Somerset Street to accommodate the proposed traffic. The midtown development will include a traffic demand management plan to assist in reducing site-generated traffic impacts.

The same improvements are being proposed as the previous development, consisting of the following:

1. Optimization of signal timings to reduce the impacts of the site generated traffic at most of the study intersections.
2. A new traffic signal is proposed at the intersection of Marginal Way/Chestnut Street & the park and ride lot. This signal has been considered previously by the City of Portland and is desirable with or without the midtown development project.

As shown in the results of this supplement, the implementation of the proposed mitigation will mitigate the traffic impacts of the midtown development.

1.2 Site Description and Site Plan

The current site development will consist of four buildings. One parking garage will be constructed as part of the development. The breakout of floor space usage is proposed as 440 residential apartment units and 87,200 sf of retail space. A 700 space parking garage is proposed and will be accessed by a single driveway on Somerset Street. This driveway will serve both entering and exiting traffic. The proposed site plan is shown on the following page.

IF PEARL STREET IS CONNECTED TO MARGINAL WAY IN THE FUTURE, THE TURN-OUT WILL NEED TO BE ELIMINATED AND REPLACED WITH STANDARD CURBSIDE DROP-OFF AREA.

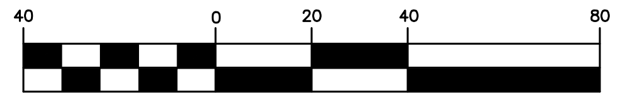
LINE TABLE: ALIGNMENTS

ID	LENGTH	DIRECTION
L1	11.70	N71° 04' 02.06"E
L2	34.95	N50° 11' 33.96"E
L3	82.21	N38° 43' 25.92"E
L4	44.18	N30° 40' 45.73"E
L5	20.19	N49° 00' 22.29"E
L6	106.00	N58° 43' 25.61"E
L7	21.70	N50° 49' 52.46"E
L8	20.19	N49° 00' 22.29"E
L9	95.15	N61° 14' 33.58"E
L10	32.69	N48° 56' 24.17"E
L11	284.79	N42° 26' 52.98"E
L12	13.41	N23° 46' 17.31"E
L13	50.38	N51° 49' 50.37"E

CURVE TABLE: ALIGNMENTS

ID	RADIUS	ARC LENGTH	DELTA	TANGENT	PC STATION	PT STATION
C1	50.00	18.22	020° 52'	9.21	0+11.70	0+29.91
C2	50.00	10.01	011° 28'	5.02	0+64.86	0+74.87
C3	200.00	28.08	008° 03'	14.06	1+57.08	1+85.16
C4	200.00	63.97	018° 20'	32.26	2+29.34	2+93.31
C5	200.00	33.92	009° 43'	17.00	3+13.50	3+47.42
C6	400.00	52.25	007° 29'	26.16	4+53.42	5+05.66
C7	200.00	36.34	010° 25'	18.22	5+27.37	5+63.71
C8	300.00	64.42	012° 18'	32.33	6+58.86	7+23.28
C9	1000.00	113.31	006° 30'	56.71	7+55.97	8+69.28
C10	150.00	48.90	018° 41'	24.67	11+54.07	12+02.96
C11	170.00	83.25	028° 04'	42.48	12+16.37	12+99.62

GRAPHIC SCALE



(IN FEET)
1 inch = 40 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
1	11.14.14	FINAL LEVEL III SUBMISSION TO CITY OF PORTLAND

REVISIONS

P.E. WILLIAM R. MOORE
LIC. # 13547

PROJECT
midtown
PORTLAND, MAINE

SHEET TITLE
OVERALL SITE PLAN

CLIENT
THE FEDERATED COMPANIES

FST 100 YEARS
FAY, SPOFFORD & THORNDIKE
ENGINEERS · PLANNERS · SCIENTISTS
778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106
FORMERLY DELUCA-HOFFMAN ASSOCIATES

DRAWN:	KEW/LA	DATE:	OCTOBER 2014
DESIGNED:	WGH/BEK	SCALE:	1" = 40'
CHECKED:	WGH/SRB	JOB NO.	SP-M037B
FILE NAME:	3062-SITE		
SHEET	C-2.0		

R:\3062B - Midtown Amended - Portland, ME\Cadd\Permit Set\dwg\3062-SITE.dwg anthon_l 11/11/2014 11:44 AM

2.0 TRIP GENERATION/ASSIGNMENT

2.1 Trip Generation

Vehicle-trips expected to be generated by the proposed building were obtained from consulting the Institute of Transportation Engineers (ITE) Trip Generation. The ITE *Trip Generation* is widely used by traffic engineers for this application. The manual provides vehicle-trip generation projections for a number of land uses. The data contained in *Trip Generation* have been obtained from the research and experiences of transportation engineering and planning professionals and is based on over 3,700 trip generation studies submitted by public agencies, developers, consulting firms and associations.

Similar to the original study, the retail trip generation is based on land use code #814 (Specialty Retail Center) and land use code #820 (Shopping center), while the residential apartment portion of the site is based on land use code #222 High Rise Apartment. The trip generation results were then reduced to account for shared trips between the land uses based on ITE and National Cooperative Highway Research Program (NCHRP) data and procedures. The same shared trip methodology was used for both the original development plan and the current development plan.

Trip reductions due to TDM (traffic demand management) were calculated based on access to alternative transportation – such as the existing bus stops and access to the Bayside Trail. A 7% credit was taken for the TDM measures. The same TDM reductions were used for both the original development plan and the current development plan.

The previous development proposal consisted of 100,000 gross sq. ft. of retail, 554 apartments and 120 condominiums and was expected to generate 304 and 379 trip ends during the AM and PM peak hours respectively. A follow up memorandum recalculated a slightly larger development to generate 316 and 392 trip ends during the AM and PM peak hours respectively. The Trip Generation from the original study is shown in Table 1 below, while the Trip Generation for the current proposal is shown in Table 2.

Table 1 – Trip Generation – Previous Development Proposal

	Entering	Exiting	Total
AM Peak Hour	106	198	304
PM Peak Hour	201	178	379

Source ITE Trip Generation Manual 9th edition

Table 2 – Trip Generation – Current Development Proposal

	Entering	Exiting	Total
AM Peak Hour	80	123	203
PM Peak Hour	140	135	276

Source ITE Trip Generation Manual 9th edition

Table 2 shows the trips estimated to be generated by the current proposal. As shown in Table 2, the current development, which will consist of 87,200 gross sq. ft. of retail and 440 apartments, is expected to generate 203 and 276 trip ends during the AM and PM peak hours respectively. **Therefore, the current proposal will generate 101 fewer trips (26 in/75 out) during the morning peak hour and 103 fewer trips (61 in/43 out) during the weekday evening peak hour than was originally studied. The current proposal is also smaller than the previously revised proposal, and will generate 113 fewer trips (28 in/85 out) during the morning peak hour and 117 fewer trips (69 in/48 out) fewer trips during the weekday evening peak hour.**

2.2 Post Development Traffic

In order to evaluate the effect of the project on traffic in the study area, vehicle-trips associated with the proposed development are projected, distributed and assigned to the adjacent roadway network. These incremental vehicle-trips are added to the Pre Development Condition traffic volumes to form the updated Post Development Condition traffic volume networks for the morning and evening commuter peak hours.

Incremental peak hour traffic volumes expected to be generated by the proposed development have been distributed according to the traffic patterns identified in the original traffic impact study and are presented in Figures 2 and 3.

Year 2018 Post Development peak hour traffic volumes, which consist of the addition of peak hour project generated traffic to 2018 Pre Development traffic volumes, are displayed in Figures 4 and 5.

Site Generated Trip Ends

AM Peak Hour

TOTAL ENTERING TRIPS = 80

TOTAL EXITING TRIPS = 123

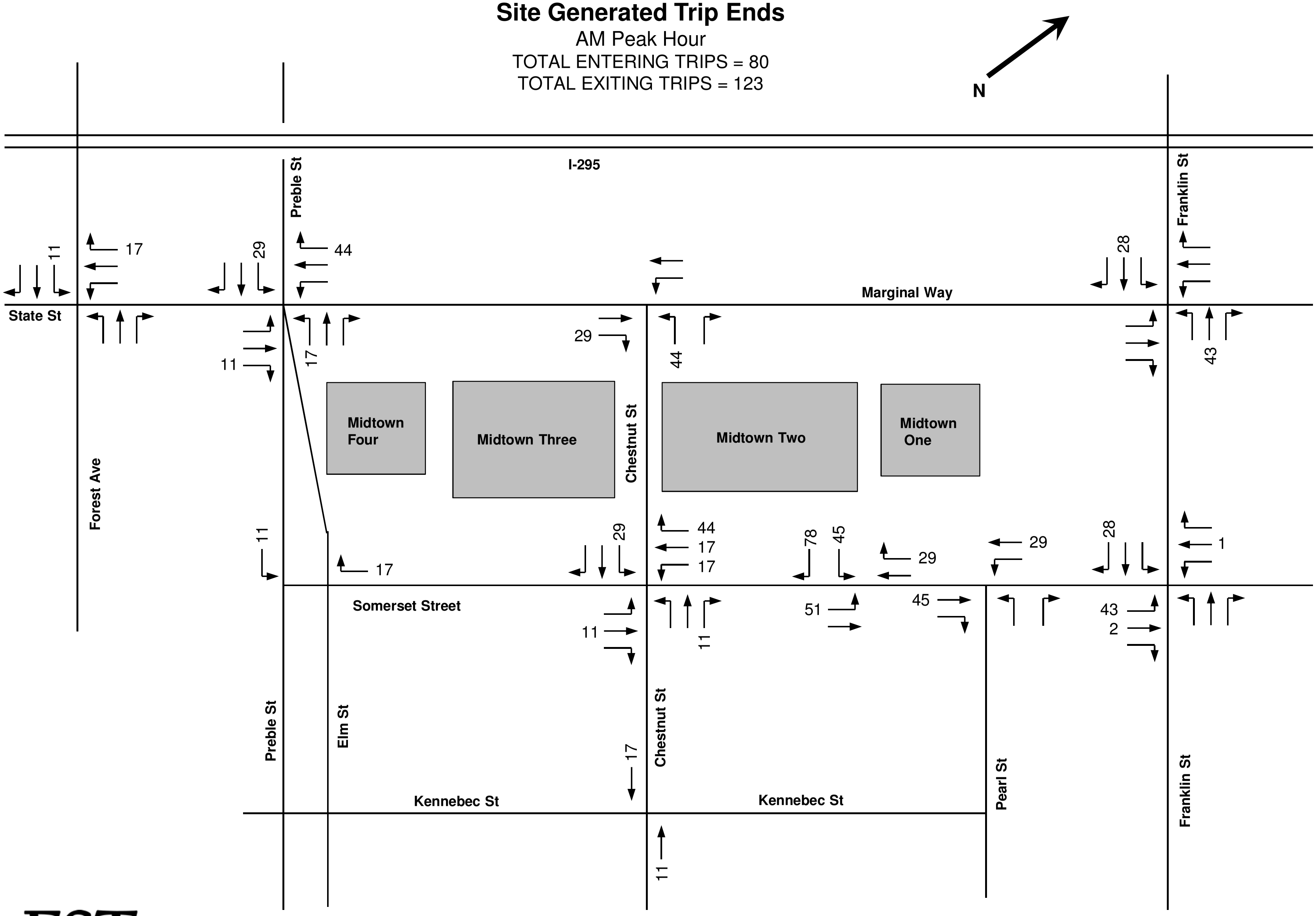


Figure 2
Not to Scale

Site Generated Trip Ends

PM Peak Hour

TOTAL ENTERING TRIPS = 140

TOTAL EXITING TRIPS = 135

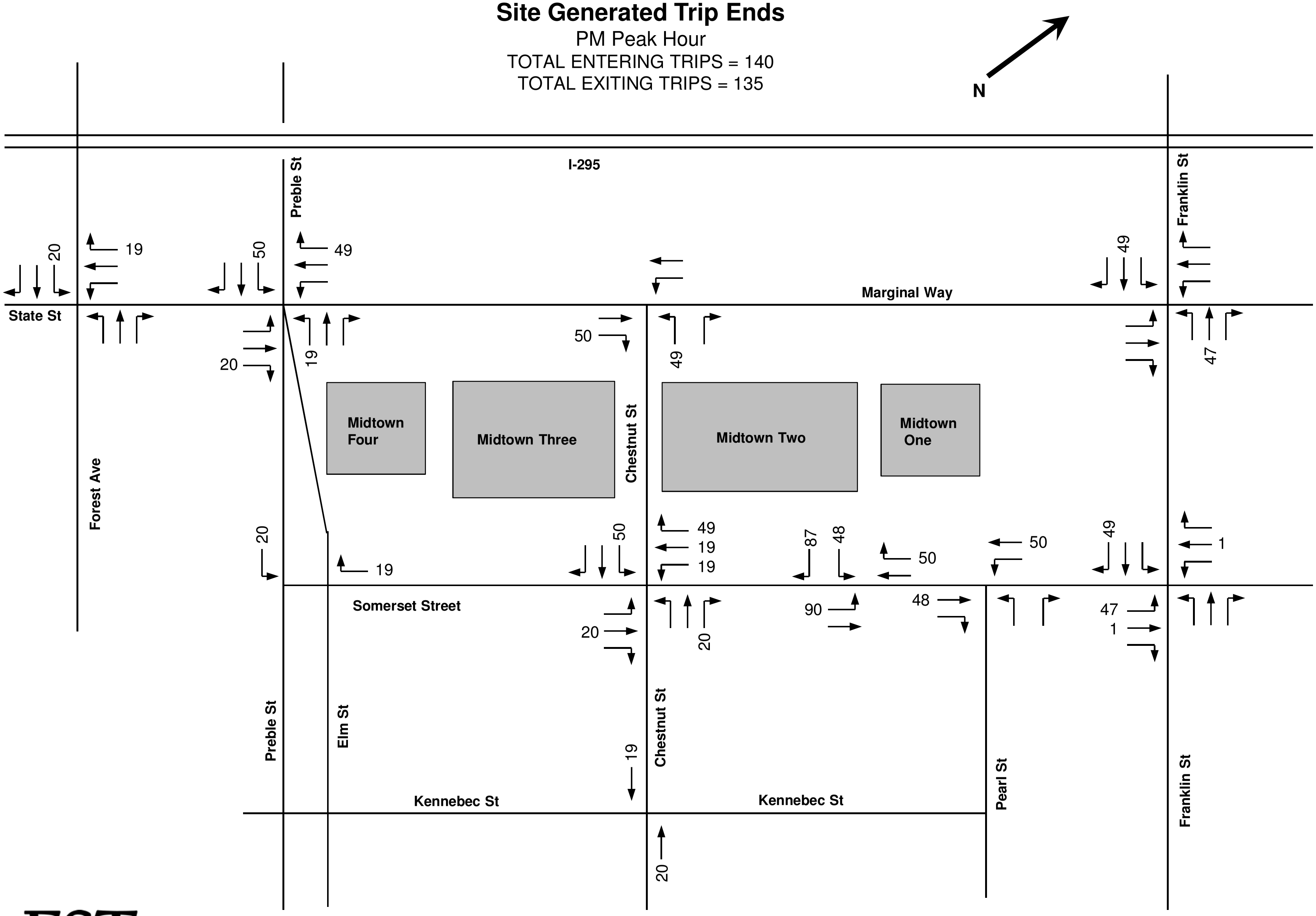


Figure 3

Not to Scale

Post-Development Turning Movement Counts

AM Peak Hour

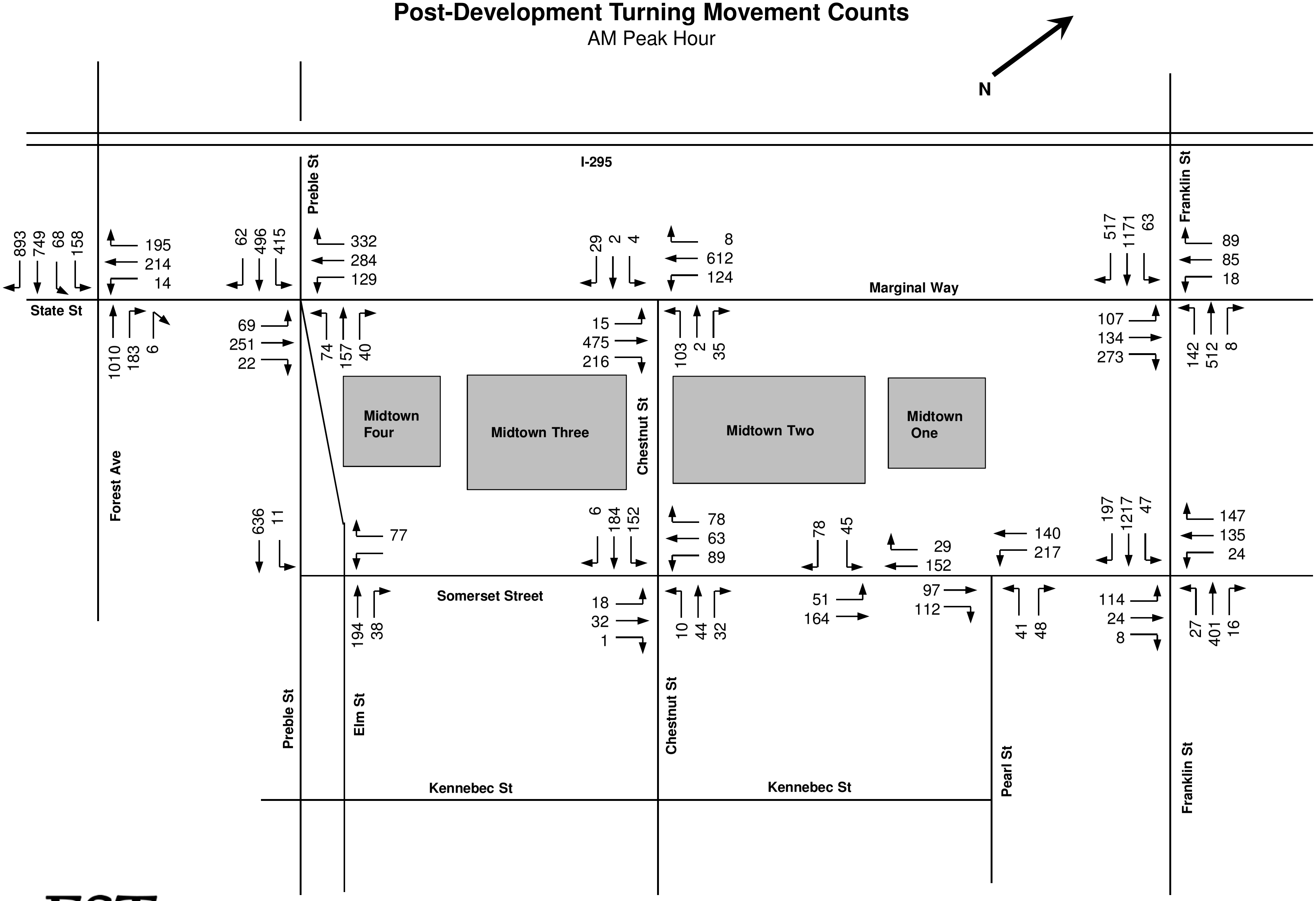


Figure 4

Not to Scale

Post-Development Turning Movement Counts

PM Peak Hour

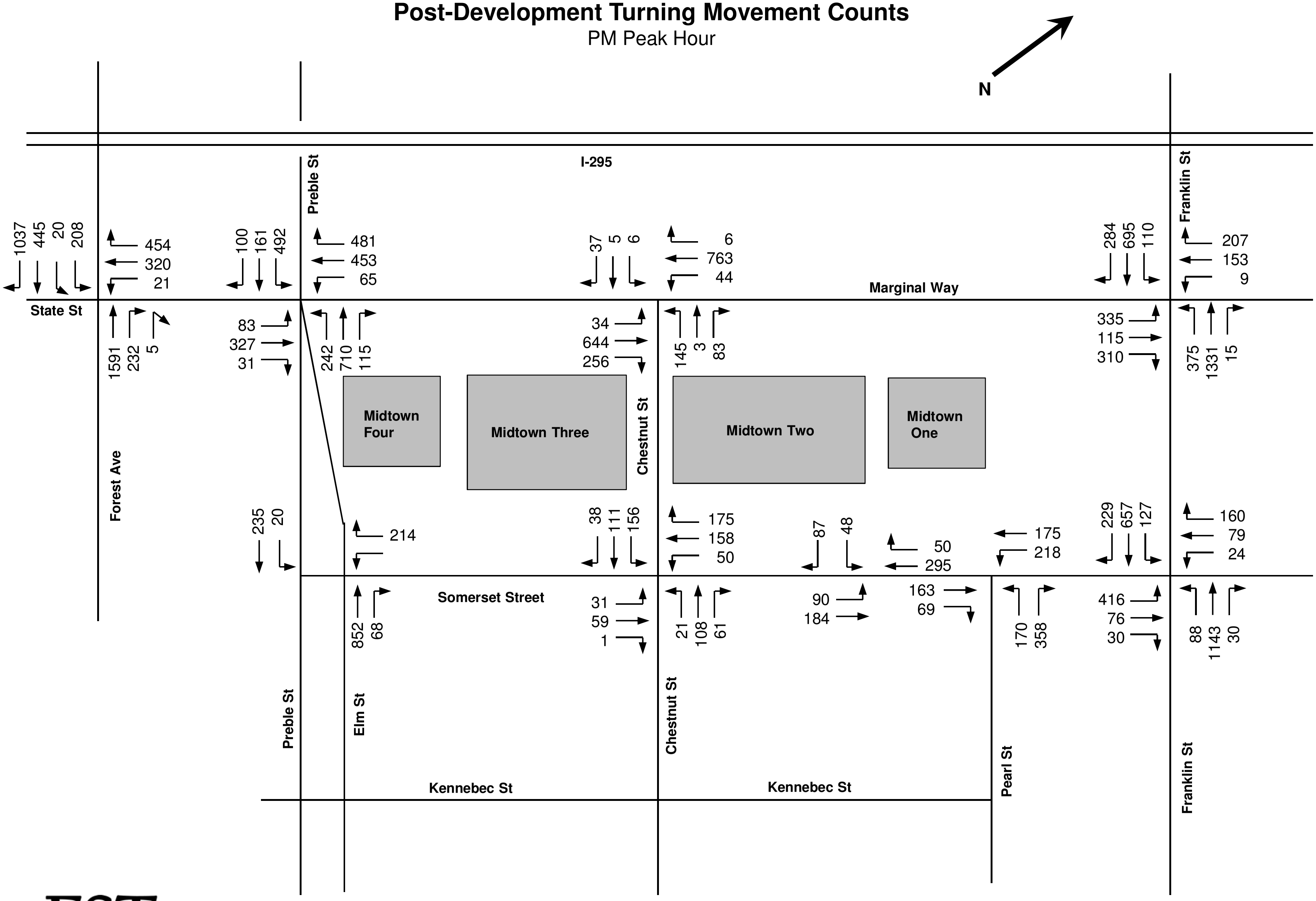


Figure 5

Not to Scale

3.0 CAPACITY ANALYSIS

To assess quality of flow, capacity analyses were conducted for the study area intersections. The capacity analyses provide a standardized indication of the ability of the intersections to accommodate traffic demands placed upon them.

Level of Service Criteria

Capacity Analyses were conducted using Simtraffic simulation software for the signalized and unsignalized intersections. The Level of Service is conceptually defined as a quantitative measure describing operational conditions within a traffic stream and their perception by motorists.

A Level of Service definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. In doing so, Level of Service provides an index to quality of traffic flow.

Six Levels of Service are defined for each type of facility. They are given letter designations, from A to F, with Level of Service (LOS) A representing the best operating conditions and LOS F representing the worst. Since the Level of Service of a traffic facility is a function of traffic flows placed upon it, an intersection may operate at a wide range of Levels of Service, depending on time of day, day of week, or period of year.

The average delay per vehicle approaching an intersection is used to quantify the Level of Service at a particular intersection. This is discussed briefly below, and LOS designations are defined in Table 3. Average delay measures the mean stopped delay experienced by vehicles entering an intersection during the design period. Average delay is measured for each individual turning movement that must yield the right of way, and for the intersection as a whole (including through vehicles that experience no delay).

Table 3 – Intersection Level of Service Criteria

Level of Service	Unsignalized Delay (sec/veh.)	Signalized Delay (sec/veh)
A	≤10	≤10
B	>10 to 15	>10 to 20
C	>15 to 25	>20 to 35
D	>25 to 35	>35 to 55
E	>35 to 50	>55 to 80
F	>50	>80

Source: Highway Capacity Manual, 2010, TRB

3.1 Operating Conditions

The Synchro traffic analysis software package (Version 8) with Simtraffic was employed along to evaluate operating conditions at study area intersections. Capacity analyses worksheets for each intersection can be found in the Appendix. The simulations were run for a full hour. Five simulations were run for each scenario and averaged. Since simulations were utilized as opposed to formulaic calculations, the operations at one intersection can greatly impact the operations at an upstream or downstream location.

The results of the analysis at each intersection are documented in the following pages. The 2018 Pre-Development and 2018 Post Development (Previous Development) results have been copied from the previous study. The 2018 Post Development (Current proposal) results are shown in the rightmost columns for comparison.

The 2018 AM and PM peak hour post-development results are based on the following changes:

1. Proposed development driveways,
2. Updated signal timings and phasing,
3. An adjusted lane configuration at the intersection of Franklin Street & Marginal Way, and;
4. A proposed signal at the intersection of Chestnut Street & Marginal Way.

The lane group letter identifies direction of travel and lane configuration. “L” = Left, “R” = Right, “LT” = Left and Thru combined, “RT” = Right and Thru combined and “T” is a Thru only lane. Queue lengths are expressed in feet while Delay is shown as seconds per vehicle.

Sim Traffic Results for Marginal Way, Preble Street & Elm Street

Signalized

Lane Group		2018 AM Peak Hour								
		Predevelopment			Post Development (Previous Development Plan)			Post Development (Current Development Plan		
		Queue	Delay	LOS	Queue	Delay	LOS	Queue	Delay	LOS
Marginal Way	SE L	245	34.7	C	225	12.7	B	253	17.2	B
	SE LT	407	70.0	E	267	25.6	C	331	42.7	D
	SE TR	339	17.0	B	221	11.5	B	272	22.5	C
	NE L	98	45.0	D	92	26.0	C	98	24.3	C
	NE TR	306	43.8	D	240	24.8	C	239	25.9	C
Preble St/ Elm St	NW L	85	44.1	D	97	35.4	D	79	21.6	C
	NW T	97	19.8	B	99	27.5	C	84	18.9	B
	NW TR	100	16.7	B	107	20.7	C	91	13.2	B
	SW L	145	42.3	D	168	44.9	D	191	67.5	E
	SW T	222	29.2	C	306	33.0	C	208	28.6	C
	SW R	142	3.2	A	242	27.4	C	154	5.4	A
Overall			**32.4**	**C**		**25.0**	**C**		**26.4**	**C**

Sim Traffic Results for Marginal Way, Preble Street & Elm Street

Signalized

Lane Group		2018 PM Peak Hour								
		Predevelopment			Post Development (Previous Development Plan)			Post Development (Current Development Plan		
		Queue	Delay	LOS	Queue	Delay	LOS	Queue	Delay	LOS
Marginal Way	SE L	245	46.4	D	245	46.5	D	249	23.6	C
	SE LT	382	106.7	F	734	137.2	F	323	54.2	D
	SE TR	282	25.1	C	656	31.8	C	238	21.7	C
	NE L	98	49.0	D	103	44.9	D	97	40.6	D
	NE TR	251	29.3	C	302	36.7	D	250	26.2	C
Preble St/ Elm St	NW L	211	60.8	E	207	49.4	D	220	26.8	C
	NW T	289	42.8	D	287	30.3	C	282	32.9	C
	NW TR	280	41.7	D	269	28.8	C	269	33.0	C
	SW L	200	41.3	D	257	62.6	E	185	41.1	D
	SW T	557	52.3	D	707	77.3	E	436	40.2	D
	SW R	227	7.6	A	290	7.7	A	264	13.1	B
Overall			**42.8**	**D**		**47.2**	**D**		**31.2**	**C**

At the intersection of Marginal Way, Preble Street Elm Street, the intersection will operate similar to the previous proposal during the morning peak hour, but considerably better during the evening peak hour. The signal timing has been modified to accommodate the NW L movement since the development is expected to increase volumes.

Sim Traffic Results for Somerset Street & Chestnut Street

Stop Controlled

Lane Group		2018 AM Peak Hour								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Somerset St	NE LTR	52	5.1	A	73	5.4	A	58	5.4	A
	SW LTR	74	5.4	A	93	5.5	A	89	5.3	A
Chestnut St	NW LTR	51	4.7	A	54	5.2	A	53	4.9	A
	SE LTR	85	6.3	A	101	7.6	A	109	7.7	A
Overall			**5.8**	**A**		**6.3**	**A**		**6.4**	**A**

Sim Traffic Results for Somerset Street & Chestnut Street

Stop Controlled

Lane Group		2018 PM Peak Hour								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Somerset St	NE LTR	73	13.7	B	58	5.9	A	52	4.6	A
	SW LTR	421	53.3	F	106	7.3	A	93	6.4	A
Chestnut St	NW LTR	245	37.4	E	75	6.5	A	72	6.2	A
	SE LTR	77	6.0	A	103	7.7	A	97	7.3	A
Overall			**31.1**	**D**		**7.1**	**A**		**6.3**	**A**

The intersection of Somerset Street/ Chestnut Street operates similar to the previous development proposal. There is a significant improvement during the evening peak hour over Pre-development conditions due to the proposed signal at the Chestnut Street/Marginal Way intersection. Under the pre-development scenario queues extended from Marginal Way to the Somerset Street/Chestnut Street four-way stop controlled intersections and caused an excessive delay during the evening peak hour.

Sim Traffic Results for Somerset Street & Elm Street

Stop Controlled

Lane Group		**2018 AM Peak Hour**								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Somerset St	SW R	464	4.3	A						
	SW TR				51	3.8	A	56	4.9	A
	NE T				37	6.2	A	38	5.9	A
Elm St	NW L	0	0.2	A	4	0.2	A	4	0.2	A
	NW LR	526	0.3	A	3	0.2	A	4	0.2	A
Overall			**1.1**	**A**		**1.6**	**A**		**1.8**	**A**

Sim Traffic Results for Somerset Street & Elm Street

Stop Controlled

Lane Group		**2018 PM Peak Hour**								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Somerset St	SW R	143	20.2	C						
	SW TR				191	22.9	C	147	18.5	C
	NE T				49	14.6	B	85	19.2	C
Elm St	NW L	105	2.2	A	95	2.0	A	57	1.4	A
	NW LR	67	1.0	A	74	0.8	A	36	0.9	A
Overall			**4.8**	**A**		**6.5**	**A**		**5.6**	**A**

It was assumed that Somerset Street will be extended to Preble Street in the Post development scenario. In the predevelopment scenario Somerset Street ends at Elm Street. The intersection operates at LOS A under all scenarios.

Sim Traffic Results for Marginal Way & Franklin Street

Signalized

Lane Group		**2018 AM Peak Hour**								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Marginal Way	NB LT	233	35.9	D						
	NB L				124	34.2	C	112	36.9	D
	NB R	189	20.3	C						
	NB TR				414	46.9	D	411	43.7	D
	SB LT	153	47.1	D	151	51.7	D	163	54.4	D
	SB R	63	5.9	A	74	6.8	A	77	7.2	A
Franklin Street	EB L	145	41.4	D	151	33.8	C	123	32.0	C
	EB T	222	17.2	B	222	15.4	B	223	21.4	C
	EB T	212	15.8	B	223	14.6	B	201	21.1	C
	EB R	212	10.5	B	203	9.0	A	207	12.6	B
	WB L	202	53.4	D	168	49.5	D	208	63.5	E
	WB T	236	19.2	B	223	18.4	B	182	19.1	B
	WB TR	159	15.6	B	147	15.6	B	194	17.0	B
Overall			**20.5**	**C**		**22.3**	**C**		**25.7**	**C**

Sim Traffic Results for Marginal Way & Franklin Street

Signalized

Lane Group		**2018 PM Peak Hour**								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Marginal Way	NB LT	949	162.3	F						
	NB L				339	44.7	D	398	61.5	E
	NB R	568	16.7	B						
	NB TR				298	27.7	C	323	29.0	C
	SB LT	181	41.3	D	244	66.7	E	216	54.3	D
	SB R	149	20.7	C	192	27.0	C	187	30.1	C
Franklin Street	EB L	170	69.4	E	168	81.1	F	160	69.5	E
	EB T	223	48.2	D	222	47.0	D	234	58.4	E
	EB T	209	10.3	D	210	37.4	D	207	47.4	D
	EB R	146	16.9	B	139	16.5	B	212	20.6	C
	WB L	445	90.6	F	430	62.7	E	377	58.7	E
	WB T	536	34.9	C	511	21.0	C	427	27.2	C
	WB TR	455	31.9	C	506	36.5	D	428	33.3	C
Overall			**53.8**	**D**		**39.5**	**D**		**40.9**	**D**

The current proposal will operate with similar conditions as the previous proposal at the intersection of Marginal Way and Franklin Street. The signal timings at the Franklin Street intersections were optimized to mitigate the changed traffic patterns. It is assumed that these signal operations will be more thoroughly examined by an ongoing study to improve the Franklin Street facility by the City of Portland.

Sim Traffic Results for Franklin Street, Somerset Street & Fox

Signalized

Lane Group		**2018 AM Peak Hour**								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Franklin Street	EB L	140	37.5	D	205	36.0	D	183	39.3	D
	EB T	368	13.1	B	453	18.5	B	437	15.3	B
	EB TR	391	15.9	B	470	21.7	C	452	18.4	B
	WB L	55	44.3	D	68	42.9	D	80	52.5	D
	WB T	203	23.2	C	221	26.0	C	233	28.9	C
	WB TR	136	22.4	C	161	21.6	C	169	24.6	C
Somerset Street	NB L	91	41.5	D	124	39.0	D	97	32.2	C
	NB L	54	36.3	D	85	37.2	D	111	47.4	D
	NB TR	70	26.7	C	71	24.4	C	67	25.2	C
Fox Street	SB LT	168	39.3	D	189	39.4	D	182	45.2	D
	SB R	99	6.5	A	117	6.4	A	104	6.9	A
Overall			**19.0**	**B**		**23.1**	**C**		**22.2**	**C**

Sim Traffic Results for Franklin Street, Somerset Street & Fox

Signalized

Lane Group		**2018 PM Peak Hour**								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Franklin Street	EB L	226	58.5	E	150	52.5	D	186	62.7	E
	EB T	202	12.6	B	285	23.5	C	239	23.9	C
	EB TR	209	15.6	B	329	24.1	C	260	24.8	C
	WB L	251	62.3	E	248	62.0	E	225	47.3	D
	WB T	591	45.7	D	672	55.1	E	452	36.3	D
	WB TR	548	32.6	C	619	46.5	D	399	27.7	C
Somerset Street	NB L	354	130.8	F	322	96.1	F	198	39.3	D
	NB L	384	102.2	F	352	98.7	F	221	54.4	D
	NB TR	513	76.1	E	386	57.5	E	119	30.4	C
Fox Street	SB LT	219	60.1	E	165	49.6	D	144	43.4	D
	SB R	170	34.4	C	136	22.3	C	128	20.2	C
Overall			**45.4**	**D**		**48.5**	**D**		**33.5**	**C**

The current proposal will operate with similar conditions as the pre development condition and the previous proposal at the intersection of Marginal Way and Franklin Street during the weekday morning peak hour, and operate better during the evening peak hour.

Sim Traffic Results for East Entrance & Somerset Street

Stop Controlled

Lane Group		**2018 AM Peak Hour**								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Somerset St	NE LT				12	0.9	A	52	2.1	A
	SW TR				11	1.5	A	12	0.7	A
Driveway	SE L				43	2.9	A	40	4.4	A
	SE R				35	2.0	A	53	1.3	A
Overall						**1.5**	**A**		**1.6**	**A**

Sim Traffic Results for East Entrance & Somerset Street

Stop Controlled

Lane Group		**2018 PM Peak Hour**								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Somerset St	NE LT				20	0.9	A	92	3.9	A
	SW TR				24	1.6	A	25	1.0	A
Driveway	SE L				38	4.3	A	45	6.7	A
	SE R				35	2.9	A	53	1.6	A
Overall						**1.7**	**A**		**2.4**	**A**

The proposed driveway intersection with Somerset Street is expected to function at LOS A during both the morning and evening peak hours.

Sim Traffic Results for Marginal Way, State, Forest Avenue & Kennebec Street

Signalized

Lane Group		**2018 AM Peak Hour**								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Marginal Way	WB LT	165	54.7	D	160	53.8	D	146	50.3	D
	WB T	168	76.8	E	176	78.3	E	146	69.2	E
	WB R	160	9.9	A	171	9.4	A	38	2.4	A
Forest Ave	NB T	51	2.7	A	33	2.3	A	74	4.0	A
	NB TR	118	8.7	A	97	6.3	A	88	5.1	A
	SB L	201	59.2	E	235	59.7	E	271	68.5	E
	SB LT	294	58.2	E	284	55.4	E	295	54.3	D
	SB T	272	26.3	C	262	20.9	C	268	23.5	C
	SB R	97	2.7	A	102	2.7	A	201	3.0	A
Overall			**19.4**	**B**		**18.5**	**B**		**17.7**	**B**

Sim Traffic Results for Marginal Way, State, Forest Avenue & Kennebec Street

Signalized

Lane Group		**2018 PM Peak Hour**								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Marginal Way	WB LT	228	61.1	E	220	59.1	E	220	61.4	E
	WB T	905	214.4	F	870	201.0	F	282	95.8	F
	WB R	327	39.0	D	312	38.6	D	243	7.1	A
Forest Ave	NB T	119	5.5	A	104	5.3	A	137	7.3	A
	NB TR	148	12.7	B	143	12.5	B	166	10.8	B
	SB L	358	160.4	F	361	150.8	F	358	231.1	F
	SB LT	200	41.4	D	194	38.6	D	357	194.1	F
	SB T	207	27.3	C	191	26.1	C	329	71.3	E
	SB R	170	3.2	A	158	3.1	A	377	7.1	A
Overall			**32.5**	**C**		**31.5**	**C**		**34.7**	**C**

The intersection of Marginal Way, State Forest Avenue and Kennebec Street will operate at an overall LOS of B during the morning peak hour and LOS C during the evening peak hour. This is the same level of service as pre development conditions.

Sim Traffic Results for Somerset Street & Pearl Street

Stop Controlled

Lane Group		**2018 AM Peak Hour**								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Pearl Street	NW LR	56	6.6	A	59	6.9	A	64	7.0	A
Somerset St	NE TR	17	1.2	A	18	0.6	A	15	0.6	A
	SW LT	96	3.7	A	99	3.7	A	95	3.5	A
Overall			**3.4**	**A**		**3.1**	**A**		**3.1**	**A**

Sim Traffic Results for Somerset Street & Pearl Street

Stop Controlled

Lane Group		**2018 PM Peak Hour**								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Pearl Street	NW LR	643	82.5	F	586	69.8	F	467	39.6	D
Somerset St	NE TR	87	5.2	A	51	2.3	A	14	0.9	A
	SW LT	149	6.4	A	100	3.8	A	89	3.3	A
Overall			**42.8**	**E**		**32.9**	**D**		**19.3**	**B**

During the morning peak hour, the intersection will operate at LOS A. During the evening peak hour, the Pearl Street approach will operate at LOS F under the pre-development scenario and LOS D with the current proposal. This improvement at Pearl Street is due to the proposed signal at the Chestnut Street/Marginal Way intersection. In the pre-development conditions queues extended from Marginal Way to Somerset Street and over to the intersection with Pearl Street causing excessive delay.

Sim Traffic Results for Marginal Way, Chestnut Street & Park and Ride

Stop Controlled – Pre, Signalized Post

Lane Group		**2018 AM Peak Hour**								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Marginal Way	NE LT	45	3.3	A	119	13.3	B	142	12.9	B
	NE TR	31	3.8	A	191	12.4	B	205	12.8	B
	SW L	80	8.6	A	187	48.2	D	170	37.8	D
	SW TR	3	3.1	A	374	20.1	C	280	15.1	B
Chestnut St	NW LTR	110	33.7	D	86	10.3	B	98	13.4	B
Park and Ride	SE L	14	10.1	B	13	6.5	A	16	15.0	B
	SE TR	45	9.6	A	39	7.4	A	40	7.0	A
Overall			**5.7**	**A**		**17.9**	**B**		**15.5**	**B**

Sim Traffic Results for Marginal Way, Chestnut Street & Park and Ride

Stop Controlled – Pre, Signalized Post

Lane Group		**2018 PM Peak Hour**								
		Predevelopment			**Post Development (Previous Development Plan)**			**Post Development (Current Development Plan**		
		Queue	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**	**Queue**	**Delay**	**LOS**
Marginal Way	NE LT	105	4.9	A	235	24.9	C	196	20.5	C
	NE TR	59	3.6	A	277	13.9	B	238	12.8	B
	SW L	54	6.7	A	173	45.1	D	104	25.5	C
	SW TR	70	3.8	A	735	33.8	C	359	16.9	B
Chestnut St	NW LTR	583	146.9	F	177	15.8	B	141	13.8	B
Park and Ride	SE L	29	32.9	D	18	17.0	B	28	21.2	C
	SE TR	72	33.3	D	50	14.0	B	53	12.9	B
Overall			**23.5**	**C**		**24.0**	**C**		**16.0**	**B**

In the pre-development scenarios Marginal Way is free flowing while drivers on Chestnut Street is required to stop. Chestnut Street currently experiences significant delays during the evening peak hour. Adding a new traffic signal will improve the operations on Chestnut Street. With the change in development size, this intersection will operate better than previously analyzed.

4.0 CONCLUSION

FST has completed a supplement to the original Traffic Impact Study for the proposed midtown development located at 105 Somerset Street in Portland. This supplement highlights the change in impacts due to the change in the development. The following results have been identified in the original traffic study and this supplement;

1. The current proposal is smaller than originally proposed and consists of 440 residential apartment units along with 87,200 sf of retail development. Since the size of the development will be DECREASING, the amount of traffic to be generated by the project will decrease from the original study.
2. The proposed development is forecasted to generate 203 and 276 trip ends during the AM and PM peak hours respectively.
3. The current proposal will generate 101 fewer trips (26 in/75 out) during the morning peak hour and 103 fewer trips (61 in/43 out) during the weekday evening peak hour than was originally studied.
4. The proposed development will include a Traffic Demand Management Plan to assist in reducing site-generated traffic impacts.
5. There will be one access drive to the proposed garage, which will be located on Somerset Street.
6. Optimization of signal timings will reduce the impacts of the site generated traffic at most of the study intersections.
7. A new traffic signal is proposed at the intersection of Marginal Way/Chestnut Street & the park and ride lot. This signal has been considered previously by the City of Portland and is desirable with or without the midtown development project.

With the implementation of the proposed mitigation, the traffic impacts of the midtown development will operate similar to the pre-development conditions.

Appendix

Trip Generation Calculations

The current proposed development consists of

Total 87,200 sf retail space
Total 440 apartments.

The trip Generation was calculated using the following methodology. First the Trip Generation for each use was calculated.

Table A – Trip Generation – Current Development – For Individual Land Uses			
	Entering	Exiting	Total
AM – Retail	55	35	90
AM – Residential	33	99	132
AM - Total	**88**	**134**	**222**
PM – Retail	102	129	231
PM – Residential	93	60	153
PM - Total	**195**	**189**	**384**

Then the "shared trips" between the retail and residential uses were accounted for.

Table B – Trip Generation – Current Development – Shared Trip Credit			
	Entering	Exiting	Total
AM – Total	88	134	222
AM – External	**86**	**132**	**218**
PM – Total	195	189	384
PM – External	**151**	**145**	**296**

Lastly, a TDM credit was applied to the trip generation.

Table C – Trip Generation – Current Development – TDM Credit			
	Entering	Exiting	Total
AM – Unadjusted	86	132	218
AM- TDM (7%)	6	9	15
AM – Net Trips	**80**	**123**	**203**
PM – Unadjusted	151	145	296
PM- TDM (7%)	11	10	21
PM – Net Trips	**140**	**135**	**275**

Table 1 – Trip Generation – Current Development			
	Entering	Exiting	Total
AM	**80**	**123**	**203**
PM	**140**	**135**	**276**

Date: ________

Multi-Use Trip Generation Calculation

Time Period AM Peak Hour
Job # ________

LAND USE A **RETAIL**

ITE Land Use	814		
Size	87,200 sf		
	Total	Internal	External
Enter	55	**1**	**54**
Exit	35	**1**	**34**
Total	90	**2**	**88**
%	100%	**2%**	**98%**

Enter From External **34**

54 Exit to External

Demand 0

0

14% 5

17% 9 Demand

Balanced 0

0 Balanced

Balanced 1

1 Balanced

Demand 0

0

2% 1

1% 1 Demand

LAND USE B **OFFICE**

ITE Land Use			
Size	sf		
	Total	Internal	External
Enter		**0**	**0**
Exit		**0**	**0**
Total		**0**	**0**
%	**100%**	**#DIV/0!**	**#DIV/0!**

Exit to External **0**

0 Enter From External

Demand 0

Balanced 0

Demand 0

0 Demand

0 Balanced

0 Demand

LAND USE C **RESIDENTIAL**

ITE Land Use	232		
Size	440 units		
	Total	Internal	External
Enter	33	**1**	**32**
Exit	99	**1**	**98**
Total	132	**2**	**130**
%	**100%**	**1%**	**99%**

Enter From External **32**

98 Exit to External

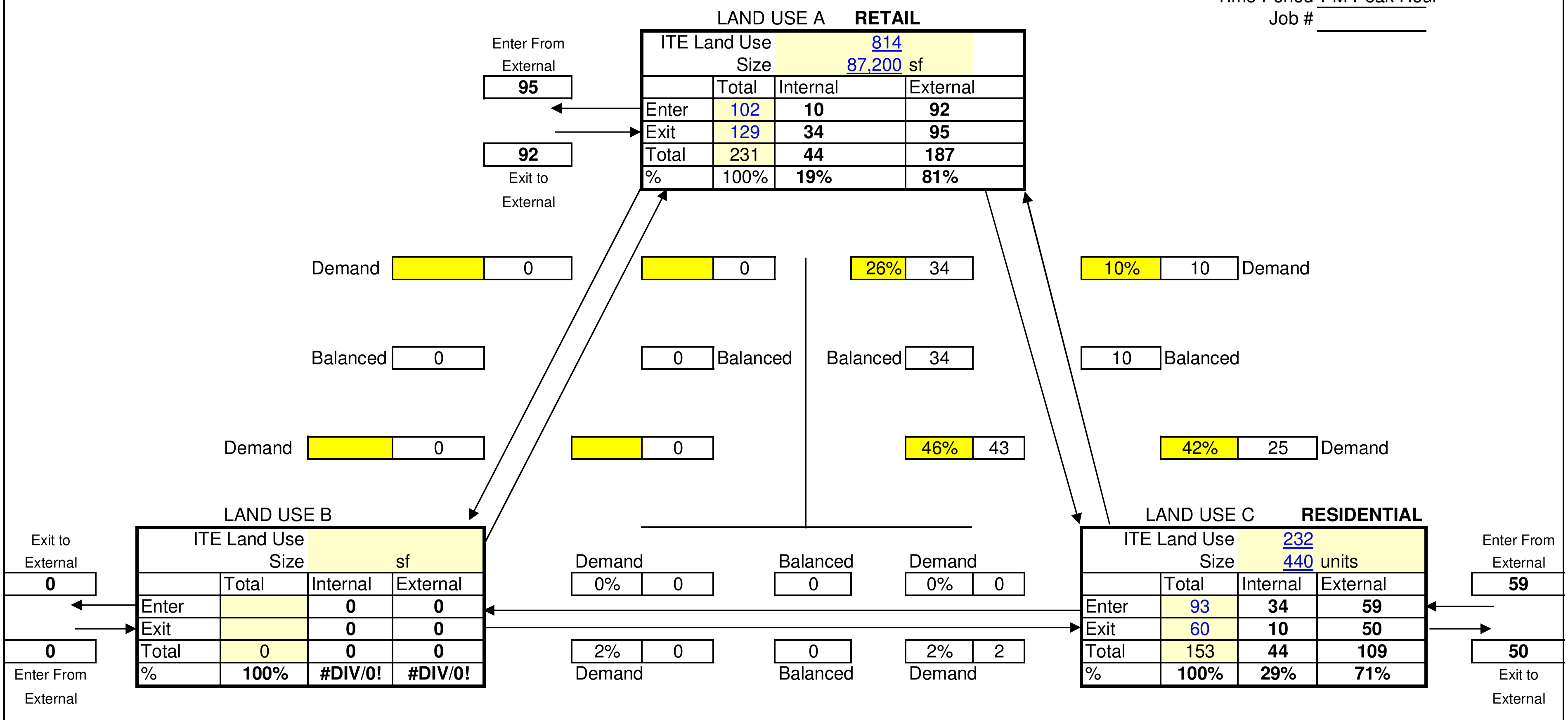
Net External Trips for Multi_Use Development				
	Land Use A	Land Use B	Land Use C	Total
Enter	**54**	**0**	**32**	**86**
Exit	**34**	**0**	**98**	**132**
Total	**88**	**0**	**130**	**219**
Single Use Trip Gen Estimate	90	0	132	222

INTERNAL CAPTURE
1%

Date: ________

Multi-Use Trip Generation Calculation

Time Period PM Peak Hour
Job # ________



LAND USE A **RETAIL**

ITE Land Use		814	
Size		87,200 sf	
	Total	Internal	External
Enter	102	**10**	**92**
Exit	129	**34**	**95**
Total	231	**44**	**187**
%	100%	**19%**	**81%**

LAND USE B

ITE Land Use			
Size		sf	
	Total	Internal	External
Enter		**0**	**0**
Exit		**0**	**0**
Total	0	**0**	**0**
%	**100%**	**#DIV/0!**	**#DIV/0!**

LAND USE C **RESIDENTIAL**

ITE Land Use	232		
Size	440 units		
	Total	Internal	External
Enter	93	**34**	**59**
Exit	60	**10**	**50**
Total	153	**44**	**109**
%	**100%**	**29%**	**71%**

Net External Trips for Multi_Use Development				
	Land Use A	Land Use B	Land Use C	Total
Enter	**92**	**0**	**59**	**151**
Exit	**95**	**0**	**50**	**145**
Total	**187**	**0**	**109**	**297**
Single Use Trip Gen Estimate	231	0	153	384

INTERNAL CAPTURE
23%

Synchro/SimTraffic Results

SimTraffic Simulation Summary
2018 AM Post Development Design Hour Volumes

11/14/2014

Summary of All Intervals

Run Number	1	2	3	4	5	Current Proposal	Avg
Start Time	7:50	7:50	7:50	7:50	7:50	7:50	7:50
End Time	9:00	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded mScheduledIntervals	1	1	1	1	1	1	1
Vehs Entered	9315	9371	9136	9304	9272	9235	9268
Vehs Exited	9188	9326	9088	9228	9268	9158	9207
Starting Vehs	363	360	408	369	393	353	361
Ending Vehs	490	405	456	445	397	430	431
Denied Entry Before	1	0	2	1	5	0	0
Travel Distance (mi)	4793	4783	4723	4789	4791	4755	4772
Travel Time (hr)	522.5	363.6	467.7	388.5	443.3	478.3	444.0
Total Delay (hr)	355.8	197.7	303.2	221.9	276.3	313.8	278.1
Total Stops	16666	15065	15915	15584	15858	15525	15768
Fuel Used (gal)	254.4	219.2	240.9	225.5	237.1	243.9	236.8

Interval #0 Information Seeding

Start Time	7:50
End Time	8:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Current Proposal	Avg
Vehs Entered	9315	9371	9136	9304	9272	9235	9268
Vehs Exited	9188	9326	9088	9228	9268	9158	9207
Starting Vehs	363	360	408	369	393	353	361
Ending Vehs	490	405	456	445	397	430	431
Denied Entry Before	1	0	2	1	5	0	0
Travel Distance (mi)	4793	4783	4723	4789	4791	4755	4772
Travel Time (hr)	522.5	363.6	467.7	388.5	443.3	478.3	444.0
Total Delay (hr)	355.8	197.7	303.2	221.9	276.3	313.8	278.1
Total Stops	16666	15065	15915	15584	15858	15525	15768
Fuel Used (gal)	254.4	219.2	240.9	225.5	237.1	243.9	236.8

1: Performance by lane

Lane	EB	EB	WB	All
Movements Served	T	T	R	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	2.2	2.3	3.0	2.5

6: Marginal Way Performance by lane

Lane	SE	SE	SE	NW	NW	NW	NE	NE	SW	SW	SW	All
Movements Served	L	LT	TR	L	T	TR	L	TR	L	T	R	
Denied Del/Veh (s)												0.2
Total Del/Veh (s)	17.2	42.7	22.5	21.6	18.9	13.2	24.3	25.9	67.5	28.6	5.4	26.4

7: Somerset St & Chestnut St Performance by lane

Lane	SE	NW	NE	SW	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	7.7	4.9	5.4	5.3	6.4

10: NB off-ramp/NB on-ramp Performance by lane

Lane	EB	EB	EB	WB	WB	NB	NB	All
Movements Served	T	T	T	T	R	R	R	
Denied Del/Veh (s)								0.0
Total Del/Veh (s)	43.6	61.9	42.1	2.1	2.1	31.5	27.8	30.7

11: Performance by lane

Lane	WB	SE	SE	SE	NW	NW	All
Movements Served	R	T	T	T	T	T	
Denied Del/Veh (s)							0.1
Total Del/Veh (s)	17.1	0.3	0.9	1.7	0.9	3.5	3.7

13: Somerset St & Elm St Performance by lane

Lane	NW	NW	NE	SW	All
Movements Served	L	LR	T	TR	
Denied Del/Veh (s)					0.1
Total Del/Veh (s)	0.2	0.2	5.9	4.9	1.8

14: Performance by lane

Lane	SE	SE	SE	NW	NW	NW	All
Movements Served	T	T	T	T	T	TR	
Denied Del/Veh (s)							0.0
Total Del/Veh (s)	0.2	0.5	1.0	6.6	6.3	5.5	3.4

15: Marginal Way & Franklin Street Performance by lane

Lane	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	All
Movements Served	L	T	T	R	L	T	TR	L	TR	LT	R	
Denied Del/Veh (s)												0.1
Total Del/Veh (s)	32.0	21.4	21.1	12.6	63.5	19.1	17.0	36.9	43.7	54.4	7.2	25.7

16: Performance by lane

Lane	EB	WB	SE	SE	NW	NW	NW	All
Movements Served	R	R	T	T	T	T	T	
Denied Del/Veh (s)								43.3
Total Del/Veh (s)	3.8	306.8	0.2	1.1	41.8	37.9	19.5	19.3

20: Somerset St/Fox St & Franklin Street Performance by lane

Lane	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	All
Movements Served	L	T	TR	L	T	TR	L	L	TR	LT	R	
Denied Del/Veh (s)												0.3
Total Del/Veh (s)	39.3	15.3	18.4	52.5	28.9	24.6	32.2	47.4	25.2	45.2	6.9	22.2

25: Preble St & Elm St Performance by lane

Lane	WB	WB	SE	SE	All
Movements Served	R	R	T	T	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	0.3	0.3	1.6	1.7	1.2

26: Somerset St & Driveway Performance by lane

Lane	SE	SE	NE	SW	All
Movements Served	L	R	LT	TR	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	4.4	1.3	2.1	0.7	1.6

27: Driveway Performance by lane

Lane	EB	NW	All
Movements Served	R	L	
Denied Del/Veh (s)			0.1
Total Del/Veh (s)	4.0	2.1	3.4

30: I-295 NB mainline & NB off-ramp Performance by lane

Lane	NB	NB	All
Movements Served	T	TR	
Denied Del/Veh (s)			1.8
Total Del/Veh (s)		1.3	1.4

36: Preble St & Somerset St Performance by lane

Lane	SE	SE	SW	All
Movements Served	LT	T	L	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	0.2	0.3	6.3	0.4

40: I-295 SB mainline Performance by lane

Lane	SB	SB	SB	All
Movements Served	T	R	R	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)		1.8	1.4	1.7

92: Forest Avenue & High St Performance by lane

Lane	EB	EB	NB	NB	SB	SB	All
Movements Served	L	LR	T	T	T	T	
Denied Del/Veh (s)							4.8
Total Del/Veh (s)	58.4	102.6	48.9	21.7	2.3	1.7	45.5

93: Kennebec St & State St/Marginal Way Performance by lane

Lane	WB	WB	WB	NB	NB	SB	SB	SB	SB	All
Movements Served	LT	T	R	T	TR>	<	LT	T	R	
Denied Del/Veh (s)										0.0
Total Del/Veh (s)	50.3	69.2	2.4	4.0	5.1	68.5	54.3	23.5	3.0	17.7

94: Bedford St & Forest Avenue Performance by lane

Lane	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	All
Movements Served	LT	R	L	T	R	L	T	TR	T	TR	
Denied Del/Veh (s)											0.4
Total Del/Veh (s)	62.7	8.1	59.1	41.4	5.0	105.2	46.5	26.7	43.5	50.9	43.3

252: Performance by lane

Lane	EB	SE	SE	SE	NW	NW	All
Movements Served	R	T	T	T	T	T	
Denied Del/Veh (s)							0.0
Total Del/Veh (s)	111.6	1.8	3.1	2.2	0.8	4.4	12.6

902: Somerset St & Pearl St Performance by lane

Lane	NW	NE	SW	All
Movements Served	LR	TR	LT	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	7.0	0.6	3.5	3.1

905: Marginal Way & Chestnut St Performance by lane

Lane	SE	SE	NW	NE	NE	SW	SW	All
Movements Served	L	TR	LTR	LT	TR	L	TR	
Denied Del/Veh (s)								0.0
Total Del/Veh (s)	15.0	7.0	13.4	12.9	12.8	37.8	15.1	15.5

Total Network Performance

Denied Del/Veh (s)	18.1
Total Del/Veh (s)	86.3

Intersection: 1:

Movement	EB	EB	B85	B85
Directions Served	T	T	T	T
Maximum Queue (ft)	161	170	15	21
Average Queue (ft)	15	17	1	1
95th Queue (ft)	101	112	10	14
Link Distance (ft)	210	210	353	353
Upstream Blk Time (%)	1	1		
Queuing Penalty (veh)	9	9		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Marginal Way

Movement	SE	SE	SE	NW	NW	NW	NE	NE	SW	SW	SW
Directions Served	L	LT	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	209	372	315	94	108	109	84	262	221	256	224
Average Queue (ft)	168	236	179	38	47	52	49	137	100	121	81
95th Queue (ft)	253	331	272	79	84	91	98	239	191	208	154
Link Distance (ft)		844	844		225	225		876		640	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	185			150			60		300		200
Storage Blk Time (%)	0	17			0		4	28	0	1	0
Queuing Penalty (veh)	2	36			0		12	19	0	4	0

Intersection: 7: Somerset St & Chestnut St

Movement	SE	NW	NE	SW
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	136	55	74	111
Average Queue (ft)	68	33	30	53
95th Queue (ft)	109	53	58	89
Link Distance (ft)	497	403	464	303
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: NB off-ramp/NB on-ramp

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	T	R	R	R
Maximum Queue (ft)	385	373	369	126	65	276	255
Average Queue (ft)	244	248	229	7	2	151	131
95th Queue (ft)	377	372	352	54	36	229	208
Link Distance (ft)	322	322	322	137	137	866	866
Upstream Blk Time (%)	7	5	5	0	0		
Queuing Penalty (veh)	31	22	19	0	0		
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 11:

Movement	WB	SE	SE	SE	NW	NW
Directions Served	R	T	T	T	T	T
Maximum Queue (ft)	320	32	112	188	79	164
Average Queue (ft)	133	1	8	17	7	49
95th Queue (ft)	286	22	71	134	50	144
Link Distance (ft)	416	249	249	249	148	148
Upstream Blk Time (%)	1		0	1	0	2
Queuing Penalty (veh)	0		0	5	1	10
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 13: Somerset St & Elm St

Movement	NW	NW	NE	SW
Directions Served	L	LR	T	TR
Maximum Queue (ft)	5	5	38	69
Average Queue (ft)	0	0	13	33
95th Queue (ft)	4	4	38	56
Link Distance (ft)	528	528	156	464
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 14:

Movement	SE	SE	NW	NW	NW
Directions Served	T	T	T	T	TR
Maximum Queue (ft)	14	50	94	117	140
Average Queue (ft)	0	4	28	33	42
95th Queue (ft)	7	28	133	146	175
Link Distance (ft)	133	133	249	249	249
Upstream Blk Time (%)			0	0	1
Queuing Penalty (veh)			1	2	7
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 15: Marginal Way & Franklin Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	LT	R
Maximum Queue (ft)	136	223	206	210	230	236	235	140	495	199	106
Average Queue (ft)	55	190	185	179	117	93	108	62	237	85	38
95th Queue (ft)	123	223	201	207	208	182	194	112	411	163	77
Link Distance (ft)		137	137	137		426	426	992	992	481	
Upstream Blk Time (%)	0	29	40	22							
Queuing Penalty (veh)	0	168	235	132							
Storage Bay Dist (ft)	50				350						150
Storage Blk Time (%)	12	42								3	
Queuing Penalty (veh)	73	26								2	

Intersection: 16:

Movement	EB	WB	SE	SE	B22	B22	NW	NW	NW
Directions Served	R	R	T	T	T	T	T	T	T
Maximum Queue (ft)	214	221	36	158	32	61	254	260	234
Average Queue (ft)	62	156	1	24	1	2	129	141	123
95th Queue (ft)	155	270	19	85	20	34	313	324	288
Link Distance (ft)	325	200	145	145	119	119	133	133	133
Upstream Blk Time (%)	0	63		0	0	0	32	33	24
Queuing Penalty (veh)	0	0		2	0	0	125	128	94
Storage Bay Dist (ft)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 20: Somerset St/Fox St & Franklin Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	L	TR	LT	R
Maximum Queue (ft)	323	459	452	163	272	232	119	122	88	233	143
Average Queue (ft)	53	209	233	22	121	68	42	68	29	102	53
95th Queue (ft)	183	437	452	80	233	169	97	111	67	182	104
Link Distance (ft)		426	426		655	655			464	695	
Upstream Blk Time (%)		1	2								
Queuing Penalty (veh)		5	11								
Storage Bay Dist (ft)	175			150			275	275			100
Storage Blk Time (%)		7			8					15	0
Queuing Penalty (veh)		3			2					22	0

Intersection: 25: Preble St & Elm St

Movement	WB
Directions Served	R
Maximum Queue (ft)	9
Average Queue (ft)	0
95th Queue (ft)	7
Link Distance (ft)	257
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 26: Somerset St & Driveway

Movement	SE	SE	NE	SW
Directions Served	L	R	LT	TR
Maximum Queue (ft)	31	67	80	28
Average Queue (ft)	21	30	15	1
95th Queue (ft)	40	53	52	12
Link Distance (ft)	5	5	303	129
Upstream Blk Time (%)	5	4		
Queuing Penalty (veh)	5	4		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 27: Driveway

Movement	EB	NW
Directions Served	R	L
Maximum Queue (ft)	84	42
Average Queue (ft)	46	28
95th Queue (ft)	73	45
Link Distance (ft)	192	5
Upstream Blk Time (%)		2
Queuing Penalty (veh)		2
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 30: I-295 NB mainline & NB off-ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 36: Preble St & Somerset St

Movement	SW
Directions Served	L
Maximum Queue (ft)	31
Average Queue (ft)	9
95th Queue (ft)	31
Link Distance (ft)	156
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 40: I-295 SB mainline

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 92: Forest Avenue & High St

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	LR	T	T	T	T
Maximum Queue (ft)	464	478	350	175	39	24
Average Queue (ft)	388	449	203	141	5	2
95th Queue (ft)	517	504	290	220	24	13
Link Distance (ft)	441	441	513		123	123
Upstream Blk Time (%)	7	44				
Queuing Penalty (veh)	0	0				
Storage Bay Dist (ft)				150		
Storage Blk Time (%)			22	2		
Queuing Penalty (veh)			43	3		

Intersection: 93: Kennebec St & State St/Marginal Way

Movement	WB	WB	WB	NB	NB	SB	SB	SB	SB
Directions Served	LT	T	R	T	TR>	<	LT	T	R
Maximum Queue (ft)	160	169	75	117	136	295	302	274	275
Average Queue (ft)	94	93	6	21	27	150	202	197	54
95th Queue (ft)	146	146	38	74	88	271	295	268	201
Link Distance (ft)		876		123	123	191	191	191	191
Upstream Blk Time (%)				0	0	9	15	14	1
Queuing Penalty (veh)				1	2	44	68	64	3
Storage Bay Dist (ft)	200		125						
Storage Blk Time (%)	0	3							
Queuing Penalty (veh)	0	10							

Intersection: 94: Bedford St & Forest Avenue

Movement	EB	EB	WB	WB	WB	B258	NB	NB	NB	B22	B22	B22
Directions Served	LT	R	L	T	R	T	L	T	TR	T	T	T
Maximum Queue (ft)	365	446	215	292	88	84	232	230	219	243	255	241
Average Queue (ft)	210	97	171	134	9	6	196	196	193	197	206	207
95th Queue (ft)	343	290	237	306	43	41	213	213	213	277	275	275
Link Distance (ft)		948		220		292	119	119	119	145	145	145
Upstream Blk Time (%)		0	3	5			87	87	54	72	70	54
Queuing Penalty (veh)		0	0	0			388	387	244	320	311	243
Storage Bay Dist (ft)	330		140		75							
Storage Blk Time (%)	2	0	31	2								
Queuing Penalty (veh)	11	0	41	8								

Intersection: 94: Bedford St & Forest Avenue

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	358	428
Average Queue (ft)	244	275
95th Queue (ft)	343	392
Link Distance (ft)	760	760
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 252:

Movement	EB	B9	SE	SE	SE	NW	NW
Directions Served	R	T	T	T	T	T	T
Maximum Queue (ft)	459	348	55	123	161	49	140
Average Queue (ft)	274	73	6	14	23	3	18
95th Queue (ft)	510	320	50	91	119	37	100
Link Distance (ft)	378	411	148	148	148	191	191
Upstream Blk Time (%)	25	12	0	2	3		1
Queuing Penalty (veh)	0	0	3	10	14		4
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 902: Somerset St & Pearl St

Movement	NW	NE	SW
Directions Served	LR	TR	LT
Maximum Queue (ft)	76	27	127
Average Queue (ft)	39	2	43
95th Queue (ft)	64	15	95
Link Distance (ft)	522	129	464
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 905: Marginal Way & Chestnut St

Movement	SE	SE	NW	NE	NE	SW	SW
Directions Served	L	TR	LTR	LT	TR	L	TR
Maximum Queue (ft)	30	56	112	168	220	174	338
Average Queue (ft)	2	13	54	75	116	86	161
95th Queue (ft)	16	40	98	142	205	170	280
Link Distance (ft)		179	497	640	640		992
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	25					150	
Storage Blk Time (%)	1	5				2	6
Queuing Penalty (veh)	0	0				15	7

Network Summary

Network wide Queuing Penalty: 3475

SimTraffic Simulation Summary
2018 PM Design Hour Volumes

11/14/2014

Summary of All Intervals

Run Number	1	2	3	4	5	Current Proposal	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded mScheduledIntervals	1	1	1	1	1	1	1
Vehs Entered	10872	10740	10723	11030	10763	11209	10884
Vehs Exited	10658	10476	10503	10736	10548	11025	10661
Starting Vehs	471	417	434	450	474	448	442
Ending Vehs	685	681	654	744	689	632	672
Denied Entry Before	15	3	34	6	2	3	10
Travel Distance (mi)	5137	5100	5074	5247	5161	5319	5173
Travel Time (hr)	841.1	771.7	726.0	739.8	754.6	581.2	735.7
Total Delay (hr)	653.4	585.6	541.0	548.7	566.1	387.7	547.1
Total Stops	21920	22686	20807	22308	22292	21780	21969
Fuel Used (gal)	343.2	326.9	315.6	324.3	325.2	289.8	320.8

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Current Proposal	Avg
Vehs Entered	10872	10740	10723	11030	10763	11209	10884
Vehs Exited	10658	10476	10503	10736	10548	11025	10661
Starting Vehs	471	417	434	450	474	448	442
Ending Vehs	685	681	654	744	689	632	672
Denied Entry Before	15	3	34	6	2	3	10
Travel Distance (mi)	5137	5100	5074	5247	5161	5319	5173
Travel Time (hr)	841.1	771.7	726.0	739.8	754.6	581.2	735.7
Total Delay (hr)	653.4	585.6	541.0	548.7	566.1	387.7	547.1
Total Stops	21920	22686	20807	22308	22292	21780	21969
Fuel Used (gal)	343.2	326.9	315.6	324.3	325.2	289.8	320.8

1: Performance by lane

Lane	EB	EB	WB	All
Movements Served	T	T	R	
Denied Del/Veh (s)				0.2
Total Del/Veh (s)	24.7	32.9	4.4	12.8

6: Marginal Way Performance by lane

Lane	SE	SE	SE	NW	NW	NW	NE	NE	SW	SW	SW	All
Movements Served	L	LT	TR	L	T	TR	L	TR	L	T	R	
Denied Del/Veh (s)												0.3
Total Del/Veh (s)	23.6	54.2	21.7	26.8	32.9	33.0	40.6	26.2	41.1	40.2	13.1	31.2

7: Somerset/Somerset St & Chestnut St Performance by lane

Lane	SE	NW	NE	SW	All
Movements Served	LTR	LTR	LTR	LTR	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	7.3	6.2	4.6	6.4	6.3

10: NB off-ramp/NB on-ramp Performance by lane

Lane	EB	EB	EB	WB	WB	NB	NB	All
Movements Served	T	T	T	T	R	R	R	
Denied Del/Veh (s)								0.0
Total Del/Veh (s)	175.3	178.7	138.6	4.0	3.4	28.4	20.6	33.5

11: Performance by lane

Lane	WB	SE	SE	SE	NW	NW	All
Movements Served	R	T	T	T	T	T	
Denied Del/Veh (s)							30.7
Total Del/Veh (s)	158.6	77.9	53.7	39.1	0.7	1.5	33.4

13: Somerset & Elm St & Elm Performance by lane

Lane	NW	NW	NE	SW	All
Movements Served	L	LR	T	TR	
Denied Del/Veh (s)					0.2
Total Del/Veh (s)	1.4	0.9	19.2	18.5	5.6

14: Performance by lane

Lane	SE	SE	SE	NW	NW	NW	All
Movements Served	T	T	T	T	T	TR	
Denied Del/Veh (s)							9.2
Total Del/Veh (s)	4.5	4.4	17.3	1.6	1.9	3.7	5.9

15: Marginal Way & Franklin Street Performance by lane

Lane	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	All
Movements Served	L	T	T	R	L	T	TR	L	TR	LT	R	
Denied Del/Veh (s)												0.2
Total Del/Veh (s)	69.5	58.4	47.4	20.6	58.7	27.2	33.3	61.5	29.0	54.3	30.1	40.9

16: Performance by lane

Lane	EB	WB	SE	SE	NW	NW	NW	All
Movements Served	R	R	T	T	T	T	T	
Denied Del/Veh (s)								47.6
Total Del/Veh (s)	76.2	54.2	0.7	15.3	5.3	5.1	5.6	15.2

20: Somerset St/Fox St & Franklin Street Performance by lane

Lane	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	All
Movements Served	L	T	TR	L	T	TR	L	L	TR	LT	R	
Denied Del/Veh (s)												0.4
Total Del/Veh (s)	62.7	23.9	24.8	47.3	36.3	27.7	39.3	54.4	30.4	43.4	20.2	33.5

25: Preble St & Elm Performance by lane

Lane	WB	WB	SE	SE	All
Movements Served	R	R	T	T	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	3.8	3.8	1.3	1.3	3.3

26: Somerset St & Driveway Performance by lane

Lane	SE	SE	NE	SW	All
Movements Served	L	R	LT	TR	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	6.7	1.6	3.9	1.0	2.4

27: Driveway Performance by lane

Lane	EB	NW	All
Movements Served	R	L	
Denied Del/Veh (s)			0.1
Total Del/Veh (s)	4.3	2.0	3.2

30: I-295 NB mainline & NB off-ramp Performance by lane

Lane	NB	NB	All
Movements Served	T	TR	
Denied Del/Veh (s)			1.4
Total Del/Veh (s)	130.5	1.7	1.9

36: Preble St & Somerset Performance by lane

Lane	SE	SE	SW	All
Movements Served	LT	T	L	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	0.3	0.1	6.0	0.3

40: I-295 SB mainline Performance by lane

Lane	SB	SB	SB	All
Movements Served	T	R	R	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)		1.2	0.9	1.1

92: Forest Avenue & High St Performance by lane

Lane	EB	EB	NB	NB	SB	SB	All
Movements Served	L	LR	T	T	T	T	
Denied Del/Veh (s)							29.8
Total Del/Veh (s)	53.6	77.8	166.4	51.3	4.2	2.3	68.5

93: Kennebec St & State St/Marginal Way Performance by lane

Lane	WB	WB	WB	NB	NB	SB	SB	SB	SB	All
Movements Served	LT	T	R	T	TR>	<	LT	T	R	
Denied Del/Veh (s)										0.4
Total Del/Veh (s)	61.4	95.8	7.1	7.3	10.8	231.1	194.1	71.3	7.1	34.7

94: Bedford St & Forest Avenue Performance by lane

Lane	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	All
Movements Served	LT	R	L	T	R	L	T	TR	T	TR	
Denied Del/Veh (s)											7.3
Total Del/Veh (s)	67.0	35.4	67.0	49.5	5.2	92.9	36.2	22.2	60.7	113.3	55.3

252: Performance by lane

Lane	EB	SE	SE	SE	NW	NW	All
Movements Served	R	T	T	T	T	T	
Denied Del/Veh (s)							0.0
Total Del/Veh (s)	1075.5	102.0	78.7	14.4	1.3	6.4	34.6

902: Somerset St & Pearl St Performance by lane

Lane	NW	NE	SW	All
Movements Served	LR	TR	LT	
Denied Del/Veh (s)				0.2
Total Del/Veh (s)	39.6	0.9	3.3	19.3

905: Marginal Way & Chestnut St Performance by lane

Lane	SE	SE	NW	NE	NE	SW	SW	All
Movements Served	L	TR	LTR	LT	TR	L	TR	
Denied Del/Veh (s)								0.0
Total Del/Veh (s)	21.2	12.9	13.8	20.5	12.8	25.5	16.9	16.0

Total Network Performance

Denied Del/Veh (s)	46.0
Total Del/Veh (s)	128.1

Intersection: 1:

Movement	EB	EB	B85	B85	B55	WB
Directions Served	T	T	T	T	T	R
Maximum Queue (ft)	188	194	124	100	3	106
Average Queue (ft)	62	59	19	16	0	4
95th Queue (ft)	237	227	127	119	2	49
Link Distance (ft)	210	210	353	353	222	322
Upstream Blk Time (%)	13	11	0	0		
Queuing Penalty (veh)	31	26	1	0		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Marginal Way

Movement	SE	SE	SE	NW	NW	NW	NE	NE	SW	SW	SW
Directions Served	L	LT	TR	L	T	TR	L	TR	L	T	R
Maximum Queue (ft)	210	367	267	175	270	259	84	315	296	575	225
Average Queue (ft)	168	223	132	142	206	198	55	144	67	240	163
95th Queue (ft)	249	323	238	220	282	269	97	250	185	436	264
Link Distance (ft)		844	844		225	225		875		640	
Upstream Blk Time (%)					10	9				0	
Queuing Penalty (veh)					53	47				1	
Storage Bay Dist (ft)	185			150			60		300		200
Storage Blk Time (%)	1	14		4	21		11	27	0	9	3
Queuing Penalty (veh)	2	35		13	51		38	23	0	48	14

Intersection: 7: Somerset/Somerset St & Chestnut St

Movement	SE	NW	NE	SW
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	123	78	64	107
Average Queue (ft)	60	47	33	61
95th Queue (ft)	97	72	52	93
Link Distance (ft)	497	403	464	303
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: NB off-ramp/NB on-ramp

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	T	R	R	R
Maximum Queue (ft)	341	342	328	182	187	295	287
Average Queue (ft)	221	221	189	23	25	149	132
95th Queue (ft)	435	424	392	117	122	243	227
Link Distance (ft)	322	322	322	137	137	866	866
Upstream Blk Time (%)	30	24	15	0	0		
Queuing Penalty (veh)	48	38	24	4	4		
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 11:

Movement	WB	SE	SE	SE	NW	NW
Directions Served	R	T	T	T	T	T
Maximum Queue (ft)	466	382	393	422	34	107
Average Queue (ft)	415	159	161	255	1	14
95th Queue (ft)	525	420	408	561	20	63
Link Distance (ft)	416	249	249	249	148	148
Upstream Blk Time (%)	81	22	21	49	0	0
Queuing Penalty (veh)	0	115	111	256	0	1
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 13: Somerset & Elm St & Elm

Movement	NW	NW	NE	SW
Directions Served	L	LR	T	TR
Maximum Queue (ft)	92	64	107	207
Average Queue (ft)	11	6	46	76
95th Queue (ft)	57	36	85	147
Link Distance (ft)	528	528	156	464
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 14:

Movement	SE	SE	SE	NW	NW	NW
Directions Served	T	T	T	T	T	TR
Maximum Queue (ft)	137	148	223	93	100	221
Average Queue (ft)	19	35	126	11	12	25
95th Queue (ft)	91	125	287	82	84	129
Link Distance (ft)	133	133	133	249	249	249
Upstream Blk Time (%)	2	1	42	0	0	0
Queuing Penalty (veh)	8	4	202	1	0	1
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 15: Marginal Way & Franklin Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	LT	R
Maximum Queue (ft)	136	233	207	188	384	437	444	422	393	253	217
Average Queue (ft)	94	203	185	155	254	254	283	213	167	118	105
95th Queue (ft)	160	234	207	212	377	427	428	398	323	216	187
Link Distance (ft)		137	137	137		426	426	992	992	481	
Upstream Blk Time (%)	4	56	54	18		2	1				
Queuing Penalty (veh)	0	206	198	65		15	8				
Storage Bay Dist (ft)	50				350						150
Storage Blk Time (%)	51	65			5	1				7	3
Queuing Penalty (veh)	177	72			34	4				15	5

Intersection: 16:

Movement	EB	WB	SE	SE	B22	B22	NW	NW	NW
Directions Served	R	R	T	T	T	T	T	T	T
Maximum Queue (ft)	343	180	134	237	212	231	167	182	159
Average Queue (ft)	222	81	10	129	53	86	46	54	41
95th Queue (ft)	432	201	71	282	174	249	184	203	154
Link Distance (ft)	325	200	145	145	119	119	133	133	133
Upstream Blk Time (%)	46	15	0	29	1	18	5	5	2
Queuing Penalty (veh)	0	0	2	224	9	136	28	31	15
Storage Bay Dist (ft)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 20: Somerset St/Fox St & Franklin Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	L	TR	LT	R
Maximum Queue (ft)	248	340	317	225	498	448	206	220	163	182	158
Average Queue (ft)	97	139	164	94	278	238	119	148	59	78	74
95th Queue (ft)	186	239	260	225	452	399	198	221	119	144	128
Link Distance (ft)		426	426		655	655			464	695	
Upstream Blk Time (%)		0	0		0						
Queuing Penalty (veh)		0	0		0						
Storage Bay Dist (ft)	175			150			275	275			100
Storage Blk Time (%)	4	4		0	30		0	0		7	5
Queuing Penalty (veh)	13	5		2	27		0	0		12	5

Intersection: 25: Preble St & Elm

Movement	WB	WB
Directions Served	R	R
Maximum Queue (ft)	163	166
Average Queue (ft)	44	47
95th Queue (ft)	147	149
Link Distance (ft)	257	257
Upstream Blk Time (%)	1	0
Queuing Penalty (veh)	3	3
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 26: Somerset St & Driveway

Movement	SE	SE	NE	SW
Directions Served	L	R	LT	TR
Maximum Queue (ft)	57	81	136	42
Average Queue (ft)	23	29	38	5
95th Queue (ft)	45	53	92	25
Link Distance (ft)	5	5	303	129
Upstream Blk Time (%)	8	5		
Queuing Penalty (veh)	8	5		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 27: Driveway

Movement	EB	NW
Directions Served	R	L
Maximum Queue (ft)	91	64
Average Queue (ft)	46	34
95th Queue (ft)	74	49
Link Distance (ft)	192	5
Upstream Blk Time (%)		5
Queuing Penalty (veh)		7
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 30: I-295 NB mainline & NB off-ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 36: Preble St & Somerset

Movement	SW
Directions Served	L
Maximum Queue (ft)	31
Average Queue (ft)	5
95th Queue (ft)	24
Link Distance (ft)	156
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 40: I-295 SB mainline

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 92: Forest Avenue & High St

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	LR	T	T	T	T
Maximum Queue (ft)	446	473	554	175	50	25
Average Queue (ft)	394	442	498	172	7	3
95th Queue (ft)	505	484	631	181	31	18
Link Distance (ft)	431	431	513		149	149
Upstream Blk Time (%)	13	48	46			
Queuing Penalty (veh)	0	0	0			
Storage Bay Dist (ft)				150		
Storage Blk Time (%)			65	34		
Queuing Penalty (veh)			198	103		

Intersection: 93: Kennebec St & State St/Marginal Way

Movement	WB	WB	WB	NB	NB	SB	SB	SB	SB
Directions Served	LT	T	R	T	TR>	<	LT	T	R
Maximum Queue (ft)	223	396	265	179	194	334	337	304	307
Average Queue (ft)	147	162	103	69	99	290	285	233	147
95th Queue (ft)	220	282	243	137	166	358	357	329	377
Link Distance (ft)		875		149	149	191	191	191	191
Upstream Blk Time (%)				1	0	83	79	41	3
Queuing Penalty (veh)				5	4	355	337	177	13
Storage Bay Dist (ft)	200		125						
Storage Blk Time (%)	2	23	8						
Queuing Penalty (veh)	15	146	26						

Intersection: 94: Bedford St & Forest Avenue

Movement	EB	EB	WB	WB	WB	B258	NB	NB	NB	B22	B22	B22
Directions Served	LT	R	L	T	R	T	L	T	TR	T	T	T
Maximum Queue (ft)	411	757	215	289	64	155	225	222	213	227	240	238
Average Queue (ft)	238	240	176	139	8	21	191	191	187	141	154	145
95th Queue (ft)	418	708	237	327	34	123	225	216	221	275	279	275
Link Distance (ft)		948		220		292	119	119	119	145	145	145
Upstream Blk Time (%)		4	5	9		1	72	73	42	33	31	24
Queuing Penalty (veh)		0	0	0		0	297	301	175	136	127	101
Storage Bay Dist (ft)	330		140		75							
Storage Blk Time (%)	5	10	36	2	0							
Queuing Penalty (veh)	25	28	49	5	0							

Intersection: 94: Bedford St & Forest Avenue

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	687	719
Average Queue (ft)	348	425
95th Queue (ft)	667	749
Link Distance (ft)	760	760
Upstream Blk Time (%)	2	12
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 252:

Movement	EB	B9	SE	SE	SE	NW	NW
Directions Served	R	T	T	T	T	T	T
Maximum Queue (ft)	453	421	258	263	255	34	102
Average Queue (ft)	396	277	154	153	171	1	4
95th Queue (ft)	574	564	297	288	319	20	47
Link Distance (ft)	378	411	148	148	148	191	191
Upstream Blk Time (%)	79	55	52	45	42		0
Queuing Penalty (veh)	0	0	269	233	215		1
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 902: Somerset St & Pearl St

Movement	NW	NE	SW
Directions Served	LR	TR	LT
Maximum Queue (ft)	526	20	116
Average Queue (ft)	237	2	41
95th Queue (ft)	467	14	89
Link Distance (ft)	522	129	464
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 905: Marginal Way & Chestnut St

Movement	SE	SE	NW	NE	NE	SW	SW
Directions Served	L	TR	LTR	LT	TR	L	TR
Maximum Queue (ft)	39	62	154	221	271	174	433
Average Queue (ft)	6	22	88	110	135	37	199
95th Queue (ft)	28	53	141	196	238	104	359
Link Distance (ft)		179	497	640	640		992
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	25					150	
Storage Blk Time (%)	4	12				0	11
Queuing Penalty (veh)	2	1				0	5

Network Summary

Network wide Queuing Penalty: 5882

EXHIBIT 10

TRANSPORTATION DEMAND MANAGEMENT (TDM) PLAN

MIDTOWN
TRANSPORTATION DEMAND MANAGEMENT (TDM) PLAN
NOVEMBER 2014

Project Description - DRAFT

The **midtown** development seeks to fulfill the Portland planning vision by constructing an urban mixed-use development adjacent to the downtown of Portland. A transformative project, **midtown** seeks to realize and redevelop former industrial sites into a vibrant and urban residential community. The overall project is anticipated to provide about 750 units of residential housing, 100,000 s.f. of retail space, and parking garages to park as many as 1120 vehicles. The design proposes a new neighborhood from Pearl to Elm Streets, and maintains and enhances the adjacent Bayside Trail with stores and pocket parklets along the length.

The master plan for **midtown** will be constructed in three Phases. Phase One is comprised of a 165' high residential tower containing over 40,000 to 45,000 s.f. of retail space on the ground level and about 200 residential units located at the corner of Somerset and extended on Pearl Street, and a 700 space parking garage. The ground floor retail will wrap the buildings. Phase Two is located fronting Somerset Street from Chestnut to Elm Streets and includes two 165' high residential towers for about 370 residential units containing about 45,000 s.f. of retail space over retail podiums with a 420 space parking garage over ground floor retail. Phase 3 will be a 165' high stand-alone 180 unit residential building* condominium above between 10,000 to 15,000 s.f. of retail space located between Elm Street and the trail.

The Federated Companies development team has worked with the City's planning staff and Planning Board to develop the concept for **midtown**. The proposal concentrates development into four towers designed to enhance the City's existing skyline and to preserve prominent views and view corridors to and from City Hall and Portland's Downtown. Similarly, locations of building setbacks and step-backs have been carefully considered to both respect existing zoning ordinances and maintain a vibrant public streetscape, full of natural light and street-level activity. **Midtown's** streetscape has been planned to accommodate new stores and cafés, pedestrian circulation, street trees and parallel parking along Somerset Street. Most importantly, the plan proposes pedestrian walkways that connect Somerset Street to the Bayside Trail. These include a mews located between **midtown 1** and Parking Garage 1, and enhancements to Chestnut Street.

In total, midtown will be a catalyst for the Bayside neighborhood, bringing approximately 100,000 s.f. of retail, and new residents to the heart of the Bayside district with the first phase anticipated to be completed in 2015 along Chestnut Street.

As part of **midtown's** approvals, the City of Portland will require the creation and issuance of a Transportation Demand Management (TDM) Plan. What follows is a Transportation Demand Management Plan that addresses the City's sustainability goals by outlining and committing to a series of measures that encourage and promote bicycling, walking, carpooling, and use of public transit.

Given both the scope of this mixed-use project, and the necessity of having buy-in from prospective tenants, the proposal that follows contemplates a two-tiered approach to the TDM, consisting of:

First Tier – Macro TDM: Consists of an overall approach to TDM for **midtown** including:

- TDM Goals and Methodologies
- Implementation
- Staffing
- Monitoring and Assessment
- Tenant Specifics Plan

Second Tier – Micro TDM(s): Consists of tenant-specific plans, the "framework" of which is articulated in the Macro TDM but which are to be more fully elaborated in dialogue with **midtown's** respective tenants (namely, residents, retailers, and parking garage operators). Each of these tenants will have different constituencies with varying travel patterns and habits and will thus require different approaches, which must be well orchestrated. Although it is not practicable to outline these plans in substantive detail until more formal agreements with tenants are in place, it is important to stress that tenants are expected to be active participants in the overall TDM goals and measures elaborated here, and to take active roles in defining their own mechanisms for participating in these goals; this expectation will be outlined in lease arrangements with tenants.

In its utilization of this tiered approach ("macro" and "micro"), the proposed framework effectively functions as a project-wide Transportation Management Association, linking the various residents, retailers, and neighborhood in general, in a set of shared strategies, to be coordinated by the TDM Coordinator, of which is described more below.

The **midtown** development will be a major multi use project that will allow tenants to live, work, and/or shop onsite, eliminating the need for daily vehicle travel. In addition, the development's approach to TDM represents a significant opportunity to reduce the number of Single Occupant Vehicles (SOVs) in the area.

Proximity to Transit

The Bayside area is currently served by the following transit services:

Ø Metro Route #8: Portland METRO provides the Portland Peninsula loop service that includes the #8 route that has two bus stops on Marginal Way (northbound) and two bus tops on Somerset Street (southbound). This service route passes by the Forest Avenue Hannaford, Congress Street, the Casco Bay Ferry Terminal, Maine Medical Center, Mercy Hospital, and Portland's West End neighborhood. Additional connections to additional locations throughout the City can be made using other Metro routes including the Portland Transportation Center, Maine Mall, Forest Avenue, North Deering, Westbrook, and Falmouth.

In addition to Metro service, Bayside is 2 miles from the Portland Transportation Center that hosts the following services:

- Downeaster (AMTRAK): This intercity passenger rail service provides connections from Portland to Saco, Old Orchard Beach, and other southerly stops including Boston's North Station. The service also connects northerly to Freeport and Brunswick, providing a direct link to the Maine Eastern Railroad, which provides seasonal service as far as Rockland in 2012. The service currently runs five round trips to and from North Station and three trips to/from Brunswick.

- Concord Coach (Formerly Concord Trailways): This intercity bus service provides non-stop service to South Station in Boston, and northerly both to Augusta and Bangor, Maine, as well as the mid coast region. During the day, buses arrive and depart about once per hour. This service allows for connections to various intercity buses, Amtrak and MBTA commuter rail services at South Station, as well as direct connections to all terminals at Boston's Logan International Airport. In addition, the Bangor bus allows for a connection to the Cyr Bus service, providing a once-daily connection to several destinations in Aroostook County.

Given its adjacency to these amenities, **midtown** is uniquely suited to take advantage of non-motorized vehicle trips, especially transit trips.

Purpose of Plan

The City of Portland requires the creation of a Transportation Demand Management Plan for all projects in excess of 50,000 square feet, or with 100 or more employees or students. The **midtown** development meets both of these criteria. A TDM Plan is key to maximizing the synergies between the project and the transit modes (existing and not yet existing) adjacent to it.

To this end, the objectives of the **midtown** TDM Plan are:

- Make maximum use of existing transit infrastructure adjacent to the project

- Propose partnerships with the City, Metro, MDOT and others aimed at increasing transit opportunities and, in the words of MDOT, contribute to providing "a safe, efficient and reliable transportation system that supports economic opportunity and quality of life".

- Reduce peak hour trip impacts to, and the effects of traffic congestion upon, adjacent roadway infrastructure

- Reduce the amount of needed parking on-site

- Encourage healthy activities such as biking, kayaking, and walking among **midtown** residents and visitors

It is important to note that this Plan should not be viewed as a series of fixed strategies. Rather it is a living document intended to be reviewed and updated on a regular basis as the midtown operators work with tenants to address changes in local transportation patterns, preferences, and prices; by means of effective coordination, goal-setting, and goal-monitoring measures **midtown** will endeavor to reach the goals articulated in this Plan in a way that is not financially or operationally burdensome to the tenants who ultimately must support the Plan. Ultimately, the goal will be to make significant reductions in peak hour single-occupancy vehicle (SOV) activity on the local street network as well as the need for on-site parking in a way that is financially and operationally sustainable for all concerned.

Employee Transportation Coordinator (TDM Coordinator)

The **midtown** developer will employ a TDM Coordinator, charged with coordinating the TDM plan. The TDM coordinator will liaise with resident representatives as well as the retailer/shop owners in order to create an effective overall approach to the following goals:

- Coordinate and promote rideshare opportunities
- Coordinate and promote the use of the following alternatives to SOV travel:
    - METRO
    - AMTRAK
    - Concord Coach and other bus lines as may be applicable
    - U Car Share
    - Car rental companies
    - Bicycle rentals

- Monitoring parking usage in conjunction with parking facility management
- Encouraging the greater use of bicycling, walking, and bus-based transit
- Overseeing ongoing monitoring and updating of the plan
- Convening a committee, ideally comprised of decision-makers representing each of the tenants/users in **midtown,** who will assist the coordinator in TDM planning and assessment
- Filing annual reports with the City

The TDM Coordinator will work with tenants at the MICRO TDM level to explore how to create effective partnerships and incentive packages with AMTRAK, Concord Coach, and METRO; the Coordinator will liaise with tenants and help them identify strategies such as incentives (free or subsidized bus passes for tenants and employees, gift coupons or periodic prize drawings to foster use of alternative modes)and how to establish subsidies and payroll deductions for employee transit passes where this is appropriate for a retail tenant.

Surveys – Employees

Six months after initial occupancy of the **midtown** facilities, and annually thereafter, **midtown** residents and retail employees will be surveyed regarding their transportation choices such as automobile/bicycle/ motorcycle-scooter ownership, parking demand, and the frequency of trips using bicycling, walking, U Car Share, carpool/vanpool, and the bus. The survey will follow the format of the "TDM2go Employee Survey", a copy of which is attached hereto, but may be expanded from time to time by the TDM Coordinator. The surveys will be conducted to determine:

- Mode of travel to and from work (car/carpool/biking/walking/bus)
- Preferences or concerns with mode of travel
- The flexibility and receptivity of employees and residents to utilize various travel modes to access **midtown** (and, crucially, to ascertain whether individuals make use of multiple modes during the course of a given year, or a given season)

Various questions will be created in the survey to determine which measures will encourage increased use of transit, for example, either via costs for parking or stronger subsidies of METRO passes, etc. The TDM Coordinator may seek to partner with the academic and/or the public sector, and public funding, to increase the efficacy of these surveys and mine the information contained therein.

Surveys – Visitors

For visitors to **midtown**, surveys will also be included. These will be provided in the following manner:

- With ticket receipt for parking garage users and retail visitors

The surveys will be conducted to determine:

- Mode of travel to and from midtown (car/carpool/biking/walking/bus)
- Preferences or concerns with mode of travel
- The flexibility and receptivity of visitors to utilizing various travel modes to access **midtown** and the Bayside area in general

Surveys will need to be simple and convenient; they could be filled out in-store, or completed with a link on-line (such as Survey Monkey) to do it afterward. Various questions will be created in the survey to determine measures to encourage increased use of transit, for example, either via costs for parking or greater promotion of transit uses. The TDM Coordinator will work with the residents and retail tenants at the MICRO TDM level to determine what kinds of incentives could elicit consistent and engaged participation in these surveys.

Car Pooling and Sharing

Through various promotional strategies (flyers, email blasts, web updates, social media, and occasional gatherings), the midtown TDM Coordinator will make visitors, workers and guests aware of and encourage use of these services.

U Car Share/Rental Cars

Portland is one of 38 cities in the United States served by U Car Share. In Portland, the service currently provides four vehicles. These vehicles are available on an hourly or daily basis. It is recommended that the **midtown** team negotiate the use of two additional vehicles with U Car Share for visitors to use on an as-needed basis, as well as traditional rental cars. This will allow for the use of a car for certain trips, which can aid in a traveler to or from the **midtown** to choose transit for a mode. Information will be provided to residents, retail workers, and parking garage users. Following the first survey, additions to U Car Share may be made if residents or retail employees desire their use in significant numbers; U-Car share may be an attractive option for local residents who are employed by one of the various tenants at **midtown**.

Ø Primary User: Residents and Employees
Ø Responsibility: **midtown**

Education for Residents and Visitors

As discussed, **midtown's** TDM coordinator will provide transit route maps, schedules, and ticket information in packets for residents and visitors. There will also be a travel kiosk(s) in the residence towers offering interactive Google-based travel planning with various vehicular modes; in addition, maps, routes, and ticket information will be posted clearly in the entry areas in each residence tower and the retail spaces. The TDM coordinator will be available, in person and/or virtually, to assist residents, visitors and employees who have questions about travel tips and ideas.

Ø Primary User: Residents and Employees
Ø Responsibility: **midtown**

Submission of Monitoring Information/Updated TDM Plan
Based upon the results of the monitoring, the **midtown** team will update the TDM Plan and submit a draft plan to the City's TDM Manager for review and comments.

The primary goal would be to reduce residents, retail, employee and visitor SOV trips by at least 7 percent, which is the level identified in the project's Traffic Impact Study. This level is considered conservative and a greater reduction in SOV trips may be realized. An ultimate goal of greater than 10 percent will be established.

The secondary goal for the initial year will be to reduce the parking demand from the calculated demand, with additional annual reductions targeted, until parking demand is reduced by a minimum of seven percent. This aggregate targeted reduction shall also include individual targets, shared equally, for the following alternative modes: increase use of transit by residents, retail, employees and visitors; increase carpooling and vanpooling by residents, retail, employees and visitors; and increase bicycle and pedestrian trips by residents and visitors until the overall goal of a 7-10% reduction is reached. The goal will be to achieve this overall 10% reduction by the end of the fifth operating year. At this point, it would be appropriate to reassess the ways in which the TDM plan should be recast in order to set additional goals for the sixth operating year and beyond. Each monitoring period will be accompanied by a parking count of **midtown's** facilities, in accordance with the methodology discussed in the parking count section.

An important responsibility for the TDM Coordinator will be to discuss future options as they become available with the City of Portland and GO MAINE, an organization charged with finding transportation options for the state.

Additional Transit Opportunities

The **midtown** development will generate substantial tax revenue that will be used by the City for transit funding and future opportunities. The **midtown** team looks forward to exploring and benefiting from these opportunities.

- Ø Primary User: Residents and Retail Employees
- Ø Responsibility: **midtown**

Scooter/Motorcycle Parking

Twenty spaces are recommended within the garages for this use, with the potential for more in the future. Those using scooters or motorcycles will also obtain a ticket to be matched with a specific space in the garages. These spaces may be subject to random compliance checks.

- Ø Primary User: Residents and Retail Employees
- Ø Responsibility: **midtown**

Bus Shelter

The **midtown** team is willing to locate a bus shelter on site, for those coming on and off the #8 Bus (discussed above), which will further encourage use of buses by residents, visitors and employees alike. Metro and the City need to establish the final Metro stop locations along Somerset Street.

Monitoring

Parking Counts

As part of its TDM Plan monitoring program, the **midtown** TDM Coordinator will oversee assessment of the use of its various operational components, starting one month after the opening of the first residential tower and annually thereafter. As one critical component of the

TDM program will be to reduce parking demand, the first part of each monitoring effort will include an hourly parking count of the facility from 11:00 AM to 11:00 PM on a weekday and a Saturday.

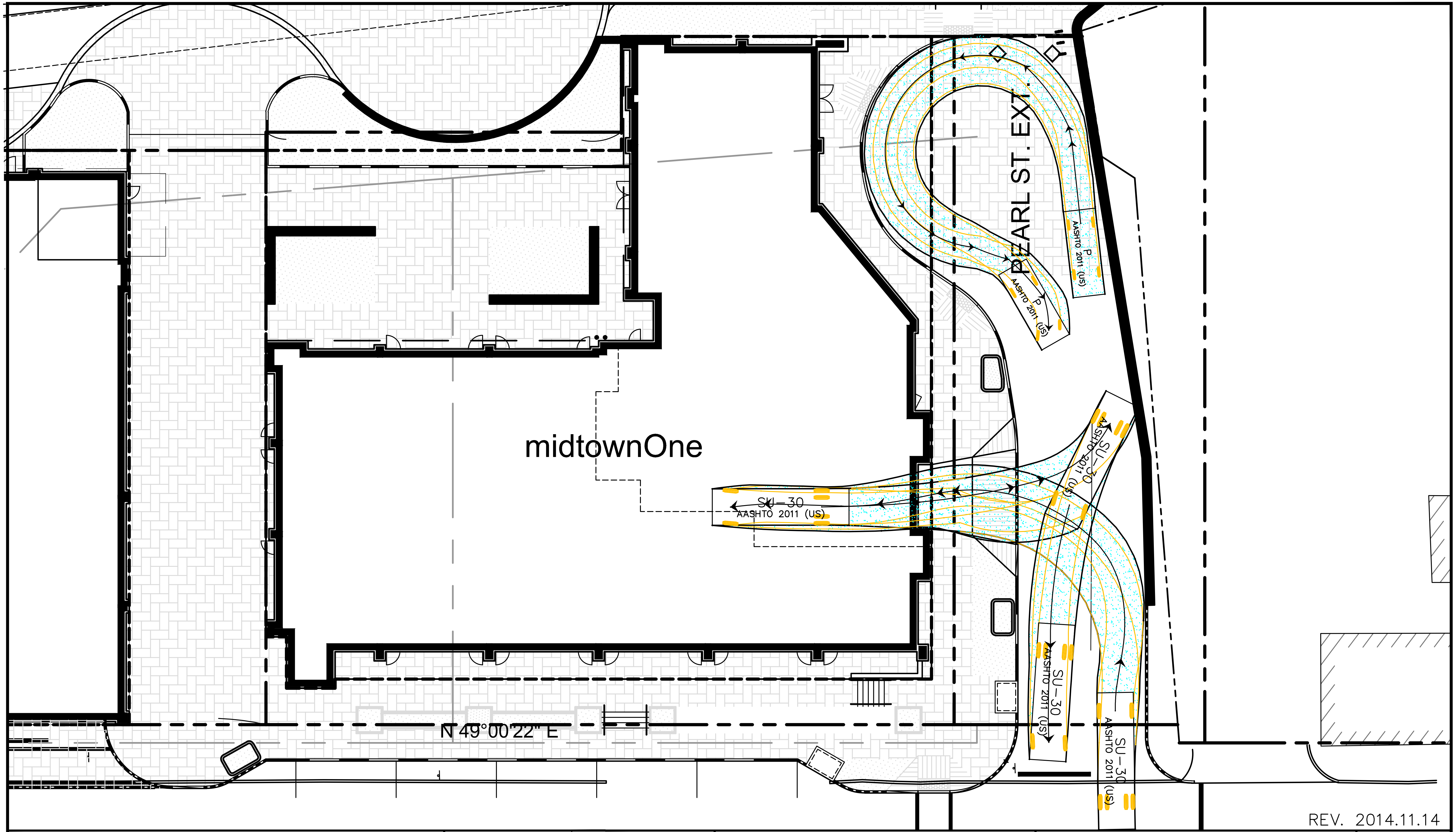
Timetable for Action Items

Action Item	Timeframe for Implementation
Provide update to City regarding progress on TDM plan implementation and status of TMA ("macro TDM")	Fall 2015
Appoint/Confirm TDM Coordinator	6 months prior to opening of residential towers
Assemble "Micro TDM" plans with tenants and create TDM Packets; share complete TDM plan, including Micro-TDM targets and proposed monitoring, with City	Early 2019
TDM Plan Implementation/On-site Parking Monitoring	Assuming final occupancy
Assess success of first six months of TDM Program and Report to City on initial effectiveness	End of 2016
Submit Year Two TDM Program with needed modifications (and annually thereafter)	End of 2017

Prepared by FST
November 14, 2014

EXHIBIT 11

AUTOTURN TEMPLATE FOR DRIVEWAYS



REV. 2014.11.14

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DESIGNED:	BEK	SCALE:	1" = 20'
CHECKED:	WGH	JOB NO.	3062
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FAY, SPOFFORD & THORNDIKE
ENGINEERS · PLANNERS · SCIENTISTS
778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106
FORMERLY DELUCA-HOFFMAN ASSOCIATES

midtown
PORTLAND, ME

AUTOTURN TURNING MOVEMENT ANALYSIS
midtownOne -SERVICE ENTRANCE
AASHTO SU-30 (SINGLE UNIT TRUCK) AT 5MPH

FIGURE
AT-1

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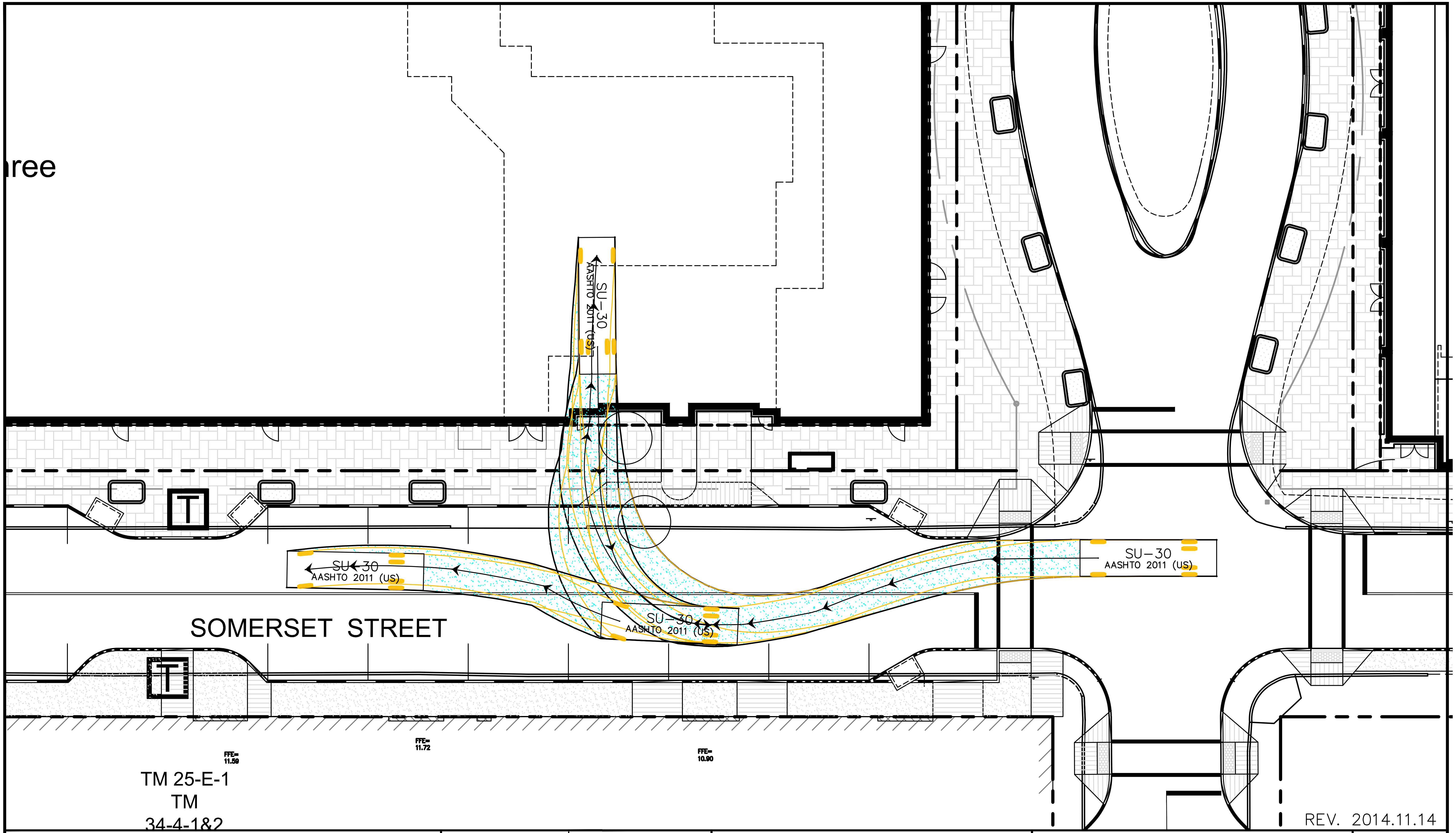

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FORMERLY DELUCA-HOFFMAN ASSOCIATES

DRAWN:	BEK	DATE:	2014.11.12
DESIGNED:	BEK	SCALE:	1" = 20'
CHECKED:	WGH	JOB NO.	3062B
FILE NAME:	3062-AUTOTURN.DWG		

midtown
PORTLAND, ME

AUTOTURN TURNING MOVEMENT ANALYSIS
midtownThree -SERVICE ENTRANCE
AASHTO SU-30 (SINGLE UNIT TRUCK) AT 5MPH

FIGURE
AT-2

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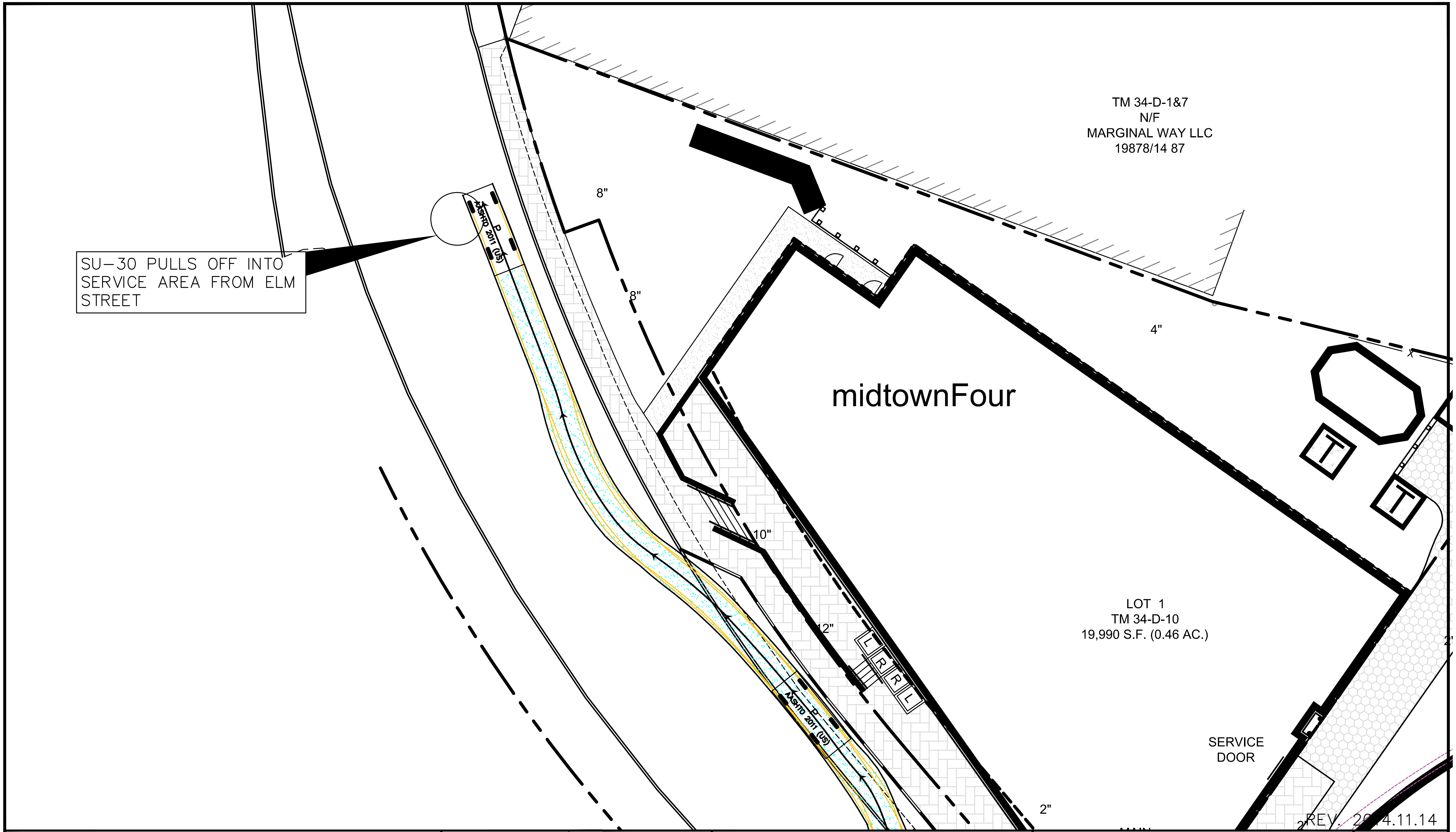

SU-30 PULLS OFF INTO SERVICE AREA FROM ELM STREET

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FORMERLY DELUCA-HOFFMAN ASSOCIATES

DRAWN: BEK
DATE: 2014.11.12
DESIGNED: BEK
SCALE: 1" = 20'
CHECKED: WGH
JOB NO. 3062
FILE NAME: 3062-AUTOTURN.DWG

midtown
PORTLAND, ME

AUTOTURN TURNING MOVEMENT ANALYSIS
midtownFour -SERVICE ENTRANCE
AASHTO SU-30 (SINGLE UNIT TRUCK) AT 5MPH

FIGURE
AT-4

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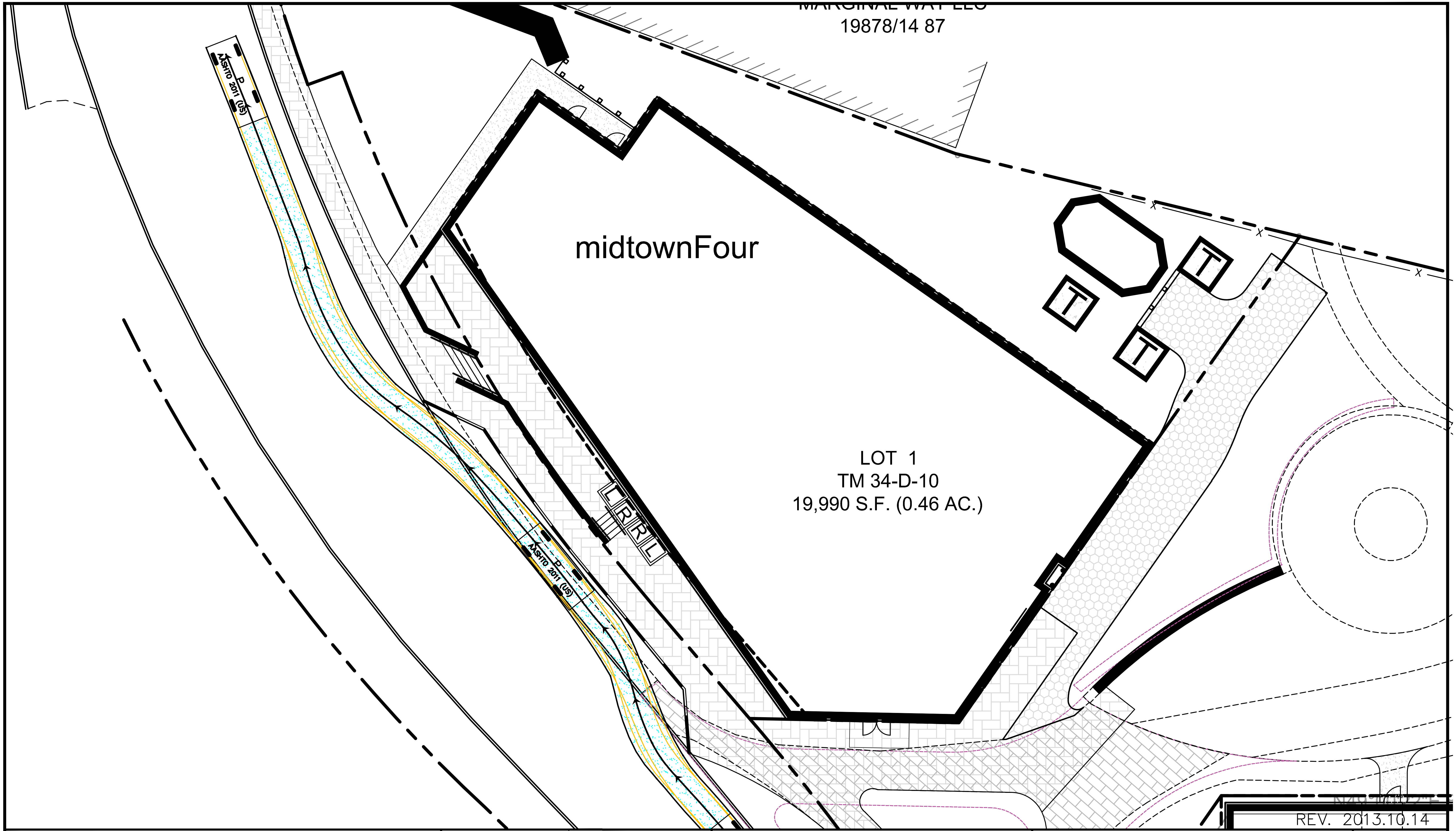

REV. 2013.10.14

FST
100 YEARS

FAY, SPOFFORD & THORNDIKE
ENGINEERS · PLANNERS · SCIENTISTS
778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106
FORMERLY DELUCA-HOFFMAN ASSOCIATES

DRAWN:	BEK	DATE:	2013.05.23
DESIGNED:	BEK	SCALE:	1" = 20'
CHECKED:	WGH	JOB NO.	3062
FILE NAME:	3062-AUTOTURN.DWG		

midtown
PORTLAND, ME

AUTOTURN TURNING MOVEMENT ANALYSIS
midtownFour -SERVICE ENTRANCE
AASHTO P (LARGE CAR) AT 5MPH

FIGURE
AT-4A

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EXHIBIT 12

TRANSIT STOP FOR METRO

From: Celina Daniell
To: "tridge@gpmetrobus.com"
Cc: Bo Kennedy; Stephen Bushey
Subject: FW: midtown, Portland ME - proposed bus stop/shelter for review
Date: Tuesday, November 11, 2014 12:49:00 PM
Attachments: C-2.1.pdf
C-2.2.pdf
C-2.3.pdf

Mr. Ridge,

On behalf of The Federated Companies, our office has been retained to submit a new Site Plan Application for the midtown project. The scope of the midtown project has been reduced from 800± to 440± residential units. The Somerset plans still anticipate to include a Metro Stop pursuant to our previous correspondence. Please find the attached update site plan for your review.

If you have any questions, please contact Bo Kennedy at our office.

Thank you

Celina Daniell

Celina M. Daniell | Technical Assistant
FST 100 YEARS
FAY, SPOFFORD & THORNDIKE
Celebrating a Century of Engineering Excellence
778 Main Street, Suite 8 | South Portland, ME 04106
T: 207-775-1121 x4101 | F: 207-879-0896
cdaniell@fstinc.com | www.fstinc.com |

From: Celina Daniell
Sent: Friday, October 18, 2013 2:24 PM
To: Celina Daniell
Subject: FW: midtown, Portland ME - proposed bus stop/shelter for review

---

From: Tom Ridge [mailto:tridge@gpmetrobus.com]
Sent: Thursday, October 17, 2013 10:20 AM
To: Robert Woodman
Subject: RE: midtown, Portland ME - proposed bus stop/shelter for review

Hi Rob,

It was nice speaking with you this morning. Here is a brief list of items we discussed and agreed to.

- 70' with angled ends is enough space for our bus to get in off the road

- Metro will provide a sign for the stop when the pole is installed at the far end of the bay
- City "No Parking Bus Stop" signs will be installed at beginning, middle, and end of bay
- The shelter location will be somewhere from middle bay to far end

If you need more information feel free to contact me.
Thank you,

Tom Ridge
Assistant Transportation Manager
Greater Portland Transit District
tridge@gpmetrobus.com
W - 207-774-0351
C - 207-310-1889

From: Robert Woodman [mailto:rwoodman@fstinc.com]
Sent: Wednesday, October 16, 2013 9:16 AM
To: tridge@gpmetrobus.com
Cc: gjordan@metrobus.com
Subject: midtown, Portland ME - proposed bus stop/shelter for review

Tom/Greg,

Please find attached an overall site plan and the Phase 2 site plan for the midtown project.

The plan identifies a bus stop on the northerly side of Somerset Street adjacent to 'midtown 2'.

The designated bus stop bump out is approx. 70 feet long with 13' long tapers on each end.

We are seeking your review of this location and feedback as to whether or not the proposed location and design will work for METRO.

Could you also email the METRO bus stop sign designs, so we can appropriately sign and designate this area as a METRO bus stop.

We are in the process of wrapping up our plans for final review by the City of Portland, so an expedited review would be appreciated.

Thanks in advance,

Rob

Robert J. Woodman. P.E., C.P.E.S.C. | *Engineer*

FAY, SPOFFORD & THORNDIKE formerly DeLuca Hoffman Associates

778 Main Street, Suite 8 | South Portland, ME 04106
Main Tel: (207) 775-1121 | Fax: (207) 879-0896
rwoodman@fstinc.com| www.fstinc.com

EXHIBIT 13

STORMWATER MANAGEMENT REPORT
&
OPERATION AND MAINTENANCE MANUAL

STORMWATER MANAGEMENT REPORT

midtown
PORTLAND, MAINE

PREPARED FOR:

THE FEDERATED COMPANIES
3301 NE 1ST AVENUE, SUITE M-302
MIAMI, FLORIDA 33137

PREPARED BY:

FAY, SPOFFORD & THORNDIKE
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, MAINE 04106
(207) 775-1121

NOVEMBER 2014

(Draft 11/14/14 subject to ongoing
FST review and City of Portland comments)

TABLE OF CONTENTS

ATTACHMENTS

1.0 INTRODUCTION

Fay, Spofford, and Thorndike has been retained by The Federated Companies to prepare civil designs and assist with the preparation of technical studies and site permit applications for the proposed midtown project which will be located along Somerset Street in Portland, Maine. The project area is approximately 3.45 acres in size and will be highly developed with parking garages and buildings. Offsite areas contribute to the watersheds which are affected by this project resulting in a total area of 4.44 acres which is examined as part of this plan.

This report presents the stormwater management for the project including prescriptive post development stormwater requirements. This report is intended to summarize the project design's compliance with the storm water requirements for the project.

The project is being designed to comply with MeDEP Chapter 500 standards and Chapter 5 of the City of Portland's Technical Standards, which mirror MeDEP Chapter 500 standards. This project will develop greater than 3 acres of impervious area thus a Site Location of Development Law permit will be required, and MeDEP Chapter 500 water quality standards are required to be met. These permit requirements will be reviewed by the City of Portland under their delegated authority from the MeDEP. A waiver is being requested from the City of Portland and MeDEP flooding standards due to the projects discharge location to back cove and the capacity of the city storm drain systems being discharged to.

FST believes that the information presented herein describes a design that fully complies with the City of Portland and MeDEP chapter 500 stormwater standards.

2.0 REFERENCES

The following reference sources were reviewed during preparation of the storm water analysis:

1. Technical Release Number 20 – Computer Program for Project Formulation – Hydrology, USDA Soil Conservation Service, May 1983.

2. Section 4 – Hydrology, USDA Soil Conservation Service, March 1985.

3. Technical Release Number 55 – Urban Hydrology for Small Watersheds, USDA Soil Conservation Service, June 1986.

4. Hydro CAD Technical Reference Manual, Applied Micro-Computer System, 2001.

5. Urban Hydrology for Small Watersheds from the USDA SCS; Technical Release 55, dated 1986

6. USDA SCS Medium Intensity Soils Map for Cumberland County (Map 82).

7. Chapter 5, City of Portland Technical Manual, May 11, 2010

8. Chapter 32, City of Portland Technical Manual, May 11, 2010

9. Chapter 500 Stormwater Management 38 M.R.S.A. § 420-D, Amended December 27, 2011

Computer programs used to assist in the various components of this analysis include:

1. HydroCAD Stormwater Modeling System, version 7.1, Applied Microcomputer Systems – used for modeling watersheds for pre and postdevelopment conditions;

2. Microsoft Excel, Microsoft Corporation – used for spreadsheet computations.

Resources used to obtain the hydrologic input data for the stormwater models were:

- Existing Conditions Survey prepared by SGC and Owen Haskell, Inc.
- City of Portland Department Public Works Contract Drawings (Sewer Separation Franklin Arterial, Marginal Way, Bayside Trail and Somerset Street)
- Field Reconnaissance

3.0 OVERVIEW OF STORMWATER RUNOFF MODELING

The stormwater analysis evaluates the following:

1. Predevelopment stormwater runoff and peak discharge rates for the watersheds.

2. Postdevelopment stormwater runoff and peak discharge rates at areas of hydrologic interest (aka POI's).

3. The effect of land cover modifications including increased impervious coverage and changes to the boundary of catchment areas.

4.0 METHODS OF ANALYSIS – STORMWATER QUANTITY

The hydrologic analyses for predevelopment and postdevelopment conditions have been conducted based upon the methodology contained in the USDA Soil Conservation Service's Technical Releases No. 20 and 55 (SCS TR-20 and TR-55) as modified for special site conditions. For this area of Cumberland County, a 24-hour SCS Type III storm distribution was used for the analysis based upon the NRCS Rainfall Distribution Map. The rainfall amounts for various storm events are as follows:

TABLE 1

Storm Event	24-Hour Rainfall
2-Year Storm	3.0
10-Year Storm	4.7
25-Year Storm	5.5

The HydroCAD computer program was used in the analysis. This program determines the critical points of the project watershed and uses SCS TR-20 methodology for evaluation of the anticipated conditions at these points. Drainage areas are defined with runoff curve numbers, times of concentration, and travel time data based on methods outlined in the USDA TR-55 Manual. To assess storage and kinematic effects of runoff, the model uses reservoirs and pipes to imitate actual conditions. Specific hydrologic characteristics including travel times, storage capacity, and the effects of hydraulic head are considered for analysis with this program.

To model any watershed, the drainage system is represented by a system network consisting of four basic components:

- **Subcatchment:** A relatively homogenous area of land that drains into a single reach or pond. Each subcatchment generates a runoff hydrograph.

- **Reach:** A uniform stream, channel, or pipe which conveys water from one point to another reach or pond. The outflow of each reach is determined by a hydrograph routing calculation.

- **Pond:** A pond, swamp, dam, or other impoundment which fills with water from one or more sources and empties in a manner determined by a weir, culvert or other device(s) at its outlet. A pond may empty into a reach or into another pond. The outflow of each pond is also determined by a hydrograph routing calculation.

To calculate the outflow for each structure, HydroCAD automatically performs these steps:

1. If there is more than one inflow, the inflows are summed together to produce a single hydrograph. If a pipe is being re-sized, its diameter will be calculated to handle the peak inflow.

2. The inflow is routed through the structure using the description and method previously specified. For subcatchments, the specified storm type and rainfall are used.

3. For a reach, the peak depth, peak velocity, contact time, etc. is calculated.

4. For a pond, the peak elevation, peak storage, etc. are calculated.

5. Any warning messages are displayed.

6. For the inflow and outflow, the peak flow and time of peak are calculated by interpolating between the three highest points.

7. The total volumes of inflow and outflow are calculated.

8. The results are stored in a database for subsequent calculations or to be examined at any time.

The process is automatically repeated for each structure until the design point is reached. HydroCAD is a hydrograph routing model. It is designed specifically to handle time varying flows, as required for pond design and other volume-sensitive calculations. As such, HydroCAD routes completely through one structure at a time. Only after determining the outflow hydrograph from a given structure does it consider the next structure downstream.

5.0 EXISTING STORM DRAIN, INLET, AND CONVEYANCE CONDITIONS

This portion of the study reviews current conditions and attempts to review 1975 predevelopment conditions.

There is a difference between the predevelopment (1975 conditions) and the current conditions plan since the area has been extensively disturbed since 1975. The following assumptions have been made to attempt to generate the predevelopment condition:

- The soils are Hydrologic Group “C” soils based upon the USDA Cumberland County Medium Intensity Soils Map (Map #82) which shows the area as Au Gres soils and Appendix B of TR55 which lists the hydrologic soil group for various soils.

- All areas within the project and its vicinity are assumed to have been "industrial areas". TR55 assigns a land use curve number of 91 to industrial districts with 28 percent pervious areas. Fay, Spofford and Thorndike believes that a CN of 91 is a conservative characterization of the predevelopment conditions. A CN of 91 is likely to be low because it is based upon pervious area of 28 percent. Therefore, since it is likely the pervious area less than 28 percent the CN value was likely higher than 91.

- The site is assumed to have had drainage patterns similar to what exist today.

- This assumption does not become significant based upon the low hydrologic times of concentration.

- It is assumed that stormwater drained from the areas studied in the pre 1975 condition instead of ponding in surface depressions as it does in current conditions.

The storm drainage includes a system that serves the easterly end of the project area which was constructed around 2003 as part of a sewer separation project. This drainage system ultimately discharges to Back Cove on the northerly side of I-295 near the Franklin Arterial Interchange. This new system starts at a manhole at the intersection of Marginal Way and Franklin Arterial with the existing 72 inch diameter storm drain downstream of the tide gate and combined sewer overflow structure for the Franklin Street Pumping Station. The 72 inch storm drain has an invert of about -4.43 at this location. The new system included approximately 556 feet of 30 to 42 inch storm drain between Marginal Way and Somerset Street with inverts ranging from approximately -1.5 to 2.1 The drain continues in a westerly direction along Somerset Street and is approximately 1013 feet in length with 18 to 30 inch storm drains along Somerset Street to the end of the drainage system. This catchment area limit is located about 40 feet westerly of the intersection of Somerset and Chestnut Street. A branch line feeding the "A" system was constructed along the pedestrian trail which runs along the northerly side of this project. This branch includes piping up to 18 inches in diameter and drains portions of the rear of the subject parcel and along the trail behind the project site.

The second drainage system serves the westerly portion of the project site. Drainage from Somerset Street flows to Elm Street and then continues northerly to Preble Street to a 60 inch diameter line that crosses under Interstate 295 and discharges to Back Cove.

Finally, there is a small catchment that enters the Chestnut Street system identified as System "C".

The new storm drains installed around 2003 included stubs for service to the midtown project area. The approximate locations of the storm drain stubs are as follows:

- 200 feet westerly of Chestnut Street (10" diameter)
- 210 feet easterly of Chestnut Street (15" diameter)
- Opposite of Pearl Street (15 inch diameter)
- 250 feet west of Franklin Arterial (15 inch diameter)

A schematic of the storm drain system and a predevelopment watershed map are provided as Figure S-2 and Drawing C-14.0.

Currently, the site is stable except for some limited rill erosion on the driveway apron of Catchment B-1.

6.0 STORMWATER MODEL RESULTS

Predevelopment Flows:

Three small catchments within or near the midtown project are tributary to the “A” System, three areas are tributary to the “B” System, and one area is tributary to the “C” system in Chestnut Street. The catchment areas and the hydraulic flow paths for these areas are depicted on Drawing C-14.0, the current conditions watershed plan. Under current conditions, two of these areas are tributary to the drainage system along Somerset Street and one is tributary to the branch of the storm drain network that runs behind the site along the trail.

Predevelopment conditions were run using HydroCAD. The convolution of the flows from Area A, Area B, and Area C were also modeled. The piping system in the model is based upon the size, length, and inverts of the existing storm lines shown on the City’s 2003 sewer separation plans.

The “B” System which serves the westerly end of the project was also modeled to a point where the subcatchments converge. This is located at the intersection of Elm and Somerset Street. The segments of this drainage system downstream of the project area were originally designed as an 84 inch corrugated aluminum metal pipe and were installed when I-295 was constructed. A combination of ash and salt was very corrosive to this pipe. The line was determined to be severely corroded and was sliplined in 2004 using a smooth wall plastic pipe.

The projected flows for the small tributary area to Chestnut Street designated as Catchment C were also modeled at the inlet catch basin as shown on the pre-development watershed map C-14.0.

The predevelopment flows for this area are summarized in the table below for the 2, 10, and 25, year storm events:

TABLE 2
midtown
PREDEVELOPMENT (1975) RUNOFF AND PEAK DISCHARGE

Catchment	**2 Year (3.00” Rainfall)**			**10 Year (4.70” Rainfall)**			**25 Year (5.50” Rainfall)**		
	Area (ac.)	**Runoff Depth**	**Peak Flow (cfs)**	**Area (ac.)**	**Runoff Depth**	**Peak Flow (cfs)**	**Area (ac.)**	**Runoff Depth**	**Peak Flow (cfs)**
A-1	1.30	2.07”	2.99	1.30	3.69”	5.20	1.30	4.47”	6.23
A-2	0.56	2.07”	1.34	0.56	3.69”	2.33	0.56	4.47”	2.79
A-3	0.24	2.07”	0.57	0.24	3.69”	1.00	0.24	4.47”	1.19
B-1	1.37	2.07”	3.28	1.37	3.69”	5.69	1.37	4.47”	6.82
B-2	0.16	2.07”	0.38	0.16	3.69”	0.66	0.16	4.47”	0.80
B-3	0.43	2.07”	1.03	0.43	3.69”	1.79	0.43	4.47”	2.14
C-1	0.38	2.07”	0.91	0.38	3.69”	1.58	0.38	4.47”	1.89
Total	**4.44**	**2.07”**	**10.50**	**4.44**	**3.69”**	**18.25**	**4.44**	4.47”	**21.86**

The range of flows per acre under predevelopment conditions for the various catchment areas is as follows:

TABLE 3
RANGE OF UNIT DISCHARGES FOR
PREDEVELOPMENT CONDITIONS

Storm Event	Low Range (cfs/acre)	High Range (cfs/acre)	Ratio High: Low
2 year	2.30	2.40	1.043
10 year	4.00	4.17	1.043
25 year	4.79	5.00	1.044

The reason the range of flows per acre is not significant and in the order of a 4 percent difference is because the hydrologic travel times only varied between from 6 and 7.1 minutes.

The runoff depths for current conditions are 2.07, 3.69, and 4.47 inches for the 2, 10, and 25 year storms respectively. This compares with rainfall of 3.0, 4.7, and 5.5 inches for the respective storms.

The actual travel time in the pipelines may be slightly different because flows from other portions of the City are tributary to the pipelines and are not included in the model. Consequently, the velocity computed during flood routing by the model is slightly different and probably slower than if the other drainage was included in the model. However, even with the reduced velocity there is little attenuation that results from travel time and routing through the storm drains. This is demonstrated by comparing the sum of the peak flows from each catchment to the convoluted flows for the overall catchment as shown below:

TABLE 4
PREDEVELOPMENT FLOW COMPARISON

Catchment	2 Year Peak Flow (cfs)	25 year Peak Flow (cfs)
A-1	2.99	6.23
A-2	1.34	2.79
A-3	0.57	1.19
Sum A1 to A3	**4.90**	**10.21**
Convoluted Flow for Watershed A	4.89	10.17
B-1	3.28	6.82
B-2	0.38	0.80
B-3	1.03	2.14
Sum B1-B3	**4.69**	**9.76**
Convoluted Flow for Watershed B	4.69	9.75
C-1	0.91	1.89

Predevelopment computations can be found in Attachment A.

Postdevelopment Flows:

The Federated site will be redeveloped with mostly rooftop and parking garage deck hard surfaces. The following assumptions have been made:

- The site can be characterized by an RCN of 96. This would permit 95 percent of the 3.45± acre site to be covered with impervious materials and 5 percent (about 0.17) to be covered as lawn.

- The time of concentration will be the minimum permitted by the HydroCAD model (i.e. 6 minutes).
- Discharge locations will use the stubs installed for the property when the City of Portland’s 2003 sewer separation project was constructed to the extent possible.
- Detention (if required) will be provided above the storage elevations of the water quality volume.

Since the time of concentration is being set at the minimum, the hydraulic points of connection to the system have the same per acre discharges for different areas are shown in the table below:

TABLE 5
ILLUSTRATION OF PEAK DISCHARGE PER ACRE WHEN CN IS 96 AND HYDROLOGIC TIME OF CONCENTERATION IS 6 MINUTES

Watershed Size (arbitrary)	Peak Discharge 2 Year (cfs)	Peak Discharge Per Acre	Peak Discharge 25 year (cfs)	Peak Discharge Per Acre
¼ acres	0.68	2.73	1.33	5.30
1 acre	2.73	2.73	5.30	5.30
4 acres	10.92	2.73	21.2	5.30

Therefore, the analysis can be conducted with the postdevelopment flows computed on the following basis without requiring formal modeling:

TABLE 6
POSTDEVELOPMENT RUNOFF AND PEAK DISCHARGE VALUES

Storm Event	Discharge Per Acre (cfs)	Runoff Volume (in.)
2	2.73	2.41
10	4.50	4.23
25	5.30	5.03

Peak flows for post development flows compared with predevelopment flows for the same catchment areas would be as follows:

TABLE 7
COMPARISON OF PRE AND POSTDEVELOPMENT RUNOFF AND PEAK FLOWS

Catchment Area	2 Year 3.00" Rainfall				10 Year 4.70" Rainfall				25 Year Rainfall 5.50"			
	Runoff		Peak Discharge		Runoff		Peak Discharge		Runoff		Peak Discharge	
	Pre (in.)	Post (in.)	Pre (cfs)	Post (cfs)	Pre (in.)	Post (in.)	Pre (cfs)	Post (cfs)	Pre (in.)	Post (in.)	Pre (cfs)	Post (cfs)
A-1	2.07	2.41	2.99	3.55	3.69	4.23	5.20	5.85	4.47	5.03	6.23	6.89
A-2	2.07	2.41	1.34	0.15	3.69	4.23	2.33	2.52	4.47	5.03	2.79	2.97
A-3	2.07	2.41	0.57	0.66	3.69	4.23	1.00	1.08	4.47	5.03	1.19	1.27
B-1	2.07	2.41	3.28	3.74	3.69	4.23	5.69	6.17	4.47	5.03	6.82	7.26
B-2	2.07	2.41	0.38	0.44	3.69	4.23	0.66	0.72	4.47	5.03	0.80	0.85
B-3	2.07	2.41	1.03	1.17	3.69	4.23	1.79	1.94	4.47	5.03	2.14	2.28

TABLE 7
COMPARISON OF PRE AND POSTDEVELOPMENT RUNOFF AND PEAK FLOWS

Catchment Area	2 Year 3.00" Rainfall				10 Year 4.70" Rainfall				25 Year Rainfall 5.50"			
	Runoff		Peak Discharge		Runoff		Peak Discharge		Runoff		Peak Discharge	
	Pre (in.)	Post (in.)	Pre (cfs)	Post (cfs)	Pre (in.)	Post (in.)	Pre (cfs)	Post (cfs)	Pre (in.)	Post (in.)	Pre (cfs)	Post (cfs)
C-1	2.07	2.41	0.91	1.04	3.69	4.23	1.58	1.71	4.47	5.03	1.89	2.01

As demonstrated previously, the routing through the storm drain system does not attenuate the peak discharge flows by any significant amount.

7.0 DETENTION REQUIREMENTS

The changes in peak flows for the overall 4.44 acre watershed analyzed would be approximately 1.71 cubic feet per second for the 25 year storm event. The storm drains along Somerset and Franklin Arterial and their full flow capacity are summarized in the table below:

TABLE 8
STORM DRAIN LINES ON SOMERSET STREET
FULL FLOW CAPACITY

Location	Pipe Dia. (in.)	Lowest Slope	Highest Slope	Lowest Capacity (cfs)	Highest Capacity (cfs)
Somerset Street	12	0.005	0.005	2.65	2.73
	18	0.003	0.003	6.23	6.23
	24	0.003	0.003	13.42	13.42
Franklin & Somerset Street	30	0.003	0.004	24.30	28.10
Franklin Street	36	0.004	0.005	45.70	51.10
	42	0.005	0.005	77.10	77.10
10" Stub*		0.005		1.67	
15" Stub*		0.005		4.94	

*Stubs were installed to project property lines as part of the 2003 sewer separation project.

The location of the project relative to the overall Marginal Way watershed which starts at Congress Street and discharges to Back Cove is near the bottom of the watershed. Consequently, it is better to discharge flows from the base of the watershed as quickly as possible to provide additional capacity in the storm drain system for upstream flows which arrive later during the storm event.

The project conveys stormwater exclusively in a piped system directly into the ocean which is why the applicant is requesting the waiver of Chapter 5, Section E.2 Flooding Standards of the Technical Manual. It should be noted that the planning board granted a waiver for this standard on the previously approved Master Development Plan Approval dated January 28th, 2014. As shown in this report, FST believes that the amendments to the site plan have had a minimal impact on the overall storm water management for this project and the same reasons as to why the waiver was granted on the original site plan are still valid.

8.0 STORMWATER QUALITY TREATMENT

Since this project requires a Site Location Development Law permit, it is required to meet MeDEP Chapter 500 Standards for water quality. The project must treat 80% of developed area and 95% of re-developed impervious area. For the water quality purposes all of the area on the project site was assumed to be impervious, thus treatment of 95% of project developed area is required.

Approach:

- **Wet Ponds –** Wet ponds are common stormwater treatment devices that retain the water quality volume of storms and also provide detention to control peak flows. A wet pond was ultimately determined unfeasible due to size constraints on the site and for tidal effects that would need to be analyzed.
- **Buffers –** Buffers were not considered as part of the site's stormwater management due to insufficient space. As an example, a minimum forested or meadow buffer width needs to be 75 ft., 100 ft. or 150 ft. with a slope of 0% - 8%, none of which is attainable on the site. Additionally, buffers are required to be encumbered by a conservation easement and deed restrictions.
- **Infiltration** – Our office has reviewed the Geotechnical Report for the site and the USDA medium intensity soil survey. The medium intensity soil survey maps the site as predominantly Au Gres soils. These soils (hydrologic soil group C) are commonly found to be somewhat excessively drained to poorly drained. Infiltration requires well-draining soils, which are not found on this site.

- **Filter** – Filters cover a broad range of techniques including pre-approved proprietary stormwater treatment devices. The preliminary stormwater management strategy presented herein focuses on proprietary filter systems to meet the General Standard requirements.

Implementation:

Our office has laid out a plan which utilizes proprietary water quality treatment filters as described in Chapter 7.0 Filtration BMPs of the MeDEP Volume III BMPs Technical Design Manual to meet the minimum treatment standards as required by the General Standards.

There are 3 different types of filter treatment units that have been utilized in the design.

- **Tree-Box Filterra Units and "Box-less" Filterra Units**

  Tree-Box Filterra units are utilized to treat micro subcatchments. For this project, the Filterras are designed to treat existing roadway flow on Somerset Street, Pearl Street and Chestnut Street. Roof runoff from midtownThree will be treated by depressed Filterras on Somerset Street which allows for water to be piped underground directly into the units. Filterras are sized based on total tributary area according to MeDEP volume III BMP's section 7.5. The following table breaks down the sizing criteria for Filterra units.

TABLE 9 FILTERRA SIZING REQUIREMENTS	
Filterra Size	**Maximum Tributary Area Allowed (Acres)**
4’x6’ or 6’x4’	0.32
4’x8’ or 8’x’4	0.42
6’x’6	0.47
6’x8’ or 8’x’6	0.64
6’x10’ or 10’x’6	0.79
6’x’12’ or 12’x6’	0.95
13’x’7 or 7’x13’	1.20

See water quality computations in Attachment B for sizing of project Tree Box Filterra and boxless Filterra units.

According to the design criteria, Filterra units must be located upstream of an isolator row and designed to treat flow from the Filterra and the bypass overflow. Isolator rows are sized based upon StormTech chambers. For a SC-740 StormTech Chamber the amount of chambers required is equal to: 1-Year flow computed for tributary area (cfs)/0.2.

For example: If the 1-year flow tributary to a Filterra system was = 1.07 CFS, the amount of isolator row chambers required would be: 1.07/0.20 = 5.35 Chambers.

For this project Brentwood Tanks have been used in place of StormTech Chambers. The amount of Brentwood Tanks required has been computed by taking the amount of volume computed for the StormTech chambers and converted to accommodate the different chamber configuration. It should be noted that the isolator row is still providing the same treatment volume using a different storage model.

Full isolator row sizing can be found on the Water Quality Computations in Attachment B.

- **<u>Storm Treats- (Subcatchment D)</u>**

Storm Treats have been designed to treat runoff from midtown Four and the area surrounding the building. The total drainage area tributary to the storm treats is approximately 19,671 sf, all of which is considered impervious.

To meet Chapter 500, the water quality provided must be equal to or greater than the following:

1”/12 x impervious area (19,761 ac) plus 0.4”/12 x landscaped area (0 ac) = Water Quality Volume (1,647 cubic feet)

Computations of the water quality volume are appended in Attachment B.

1,650 cubic feet of storage is provided in a sub-surface storage system which exceeds the required 1,647 CF water quality volume. The sub-surface storage requirements can be found in the Water Quality Calculations found in Attachment B.

Based on the revisions made to Chapter 7 of the MeDEP Best Stormwater Practices in October 2010 the StormTreat™ treatment units shall be sized to treat the entire water quality volume in 24 to 72 hours at a discharge rate of approximately 2 gpm per tank. The system must have at least one StormTreat™ tank per 1,155 cubic feet of water quality volume. Based on the required volume per tank 1,647/1155= 1.48 tanks are required for this project. Two tanks will be used.

The discharge must pass through the StormTreat™ tanks at a rate less than 2.0 gallons per minute per tank. The discharge from the 2 tanks are piped to a common 4” header and controlled with an orifice plate sized to meet the cumulative 4 gpm flow rate. The orifice drawdown computations are appended in Attachment B.

Discharge from larger storm events overflow over a broad crested weir housed in a precast concrete outlet control structure set at elevation 6.90 (i.e. the basin stage when water quality volume has been reached). The overflow piping network is sized to handle runoff from a 25-year storm event. A rain event exceeding the storm drainage network capacity would flood the channel protection basin and detention basin and discharge over the reinforced turf overflow spillway at the northeast corner of the basin.

Pretreatment for flow entering from all inlet pipes to the storage area will be provided by a Vortex pre-treatment system.

Therefore, water quality goals for the StormTreat™ Proprietary System meet the General Stormwater Standards of the November 2005 Chapter 500 Rules of MeDEP (rev. October 2010).

9.0 CHAPTER 500 TREATMENT PERCENT COMPLIANCE

The proposed redevelopment project creates 3.45 acres of redeveloped impervious area that is required to be treated under state of Maine Site Location of Development Law. All of the area on this site is considered to be impervious area, hence 95% of all developed area on this project must be treated.

Of the 3.45 acres of developed area the proposed Stormwater Management Plan provides treatment for 3.50 acres or 101.44 percent. The stormwater strategy also treats off-site area that is tributary to the designed treatment systems, which explains why the treatment area is greater than the total developed area. Hence, the strategies proposed herein meet the minimum requirements stated in the General Standards.

10.0 EROSION CONTROL

An Erosion Control Narrative, Plan, and Details have been prepared for the project and accompanies this submission in Exhibit 14.

11.0 OPERATIONS AND MAINTENANCE

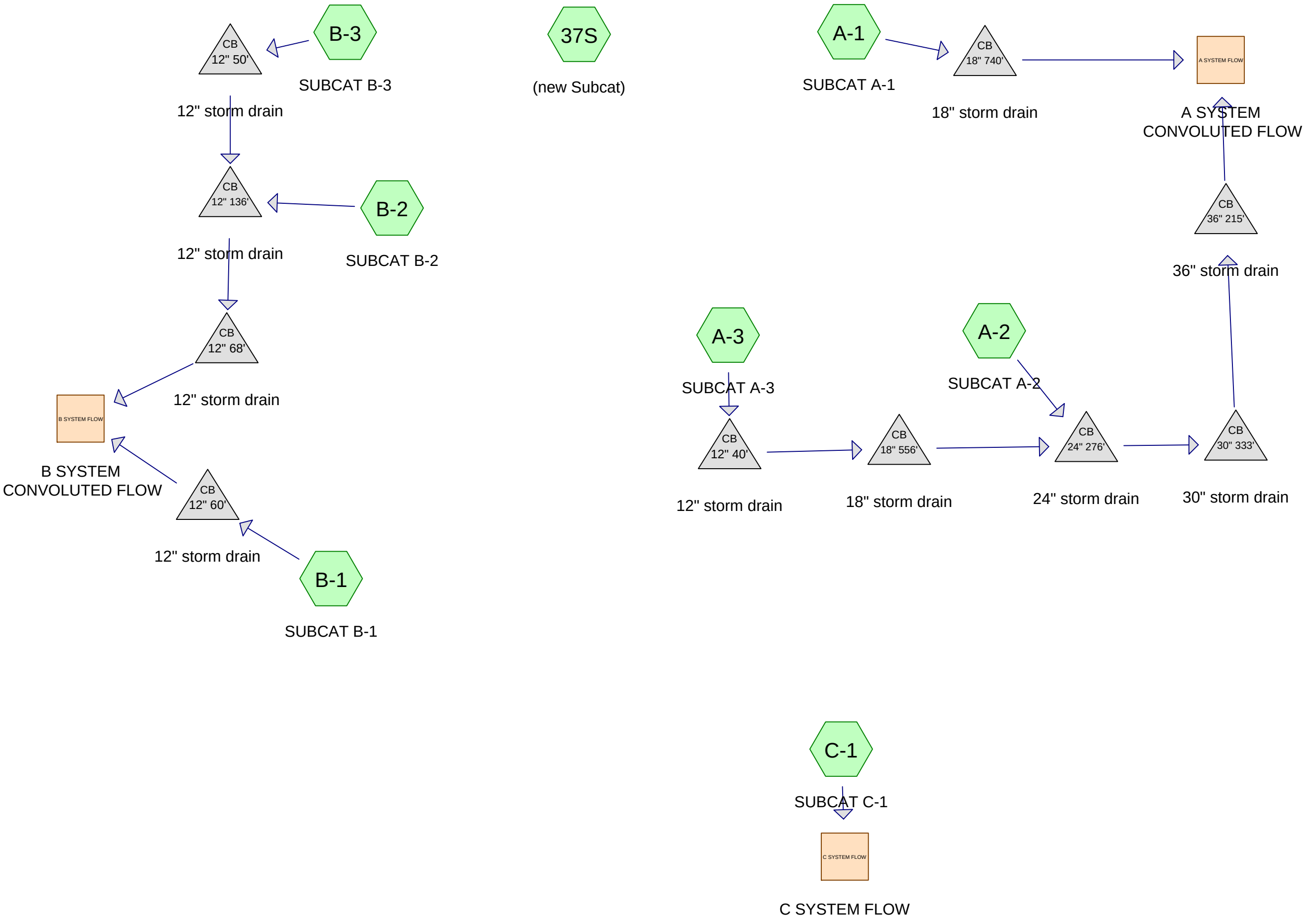
An Operations & Maintenance Manual has been prepared and accompanies this application in Attachment C.

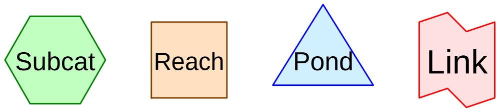
12.0 ATTACHMENTS

Attachment A – Predevelopment Computations
Attachment B – Water Quality Computations
Attachment C – Orifice Drawdown Computations
Attachment D – Operations & Maintenance Manual

ATTACHMENT A

PREDEVELOPMENT COMPUTATIONS





Drainage Diagram for 2012.10.31 Predevelopment Model
Prepared by {enter your company name here}, Printed 11/14/2014
HydroCAD® 8.50 s/n 000734 © 2007 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.440	91	(A-1,A-2,A-3,B-1,B-2,B-3,C-1)
4.440	96	(37S)
8.880		**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
8.880	Other	37S, A-1, A-2, A-3, B-1, B-2, B-3, C-1
8.880		**TOTAL AREA**

Time span=1.00-72.00 hrs, dt=0.02 hrs, 3551 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 37S: (new Subcat) Runoff Area=4.440 ac 0.00% Impervious Runoff Depth=2.55"
Tc=6.0 min CN=96 Runoff=12.40 cfs 0.944 af

Subcatchment A-1: SUBCAT A-1 Runoff Area=1.300 ac 0.00% Impervious Runoff Depth=2.07"
Flow Length=416' Tc=7.1 min CN=91 Runoff=2.99 cfs 0.224 af

Subcatchment A-2: SUBCAT A-2 Runoff Area=0.560 ac 0.00% Impervious Runoff Depth=2.07"
Flow Length=180' Tc=6.0 min CN=91 Runoff=1.34 cfs 0.097 af

Subcatchment A-3: SUBCAT A-3 Runoff Area=0.240 ac 0.00% Impervious Runoff Depth=2.07"
Flow Length=166' Tc=6.0 min CN=91 Runoff=0.57 cfs 0.041 af

Subcatchment B-1: SUBCAT B-1 Runoff Area=1.370 ac 0.00% Impervious Runoff Depth=2.07"
Flow Length=329' Tc=6.0 min CN=91 Runoff=3.28 cfs 0.236 af

Subcatchment B-2: SUBCAT B-2 Runoff Area=0.160 ac 0.00% Impervious Runoff Depth=2.07"
Flow Length=86' Slope=0.0273 '/' Tc=6.0 min CN=91 Runoff=0.38 cfs 0.028 af

Subcatchment B-3: SUBCAT B-3 Runoff Area=0.430 ac 0.00% Impervious Runoff Depth=2.07"
Flow Length=121' Slope=0.0124 '/' Tc=6.0 min CN=91 Runoff=1.03 cfs 0.074 af

Subcatchment C-1: SUBCAT C-1 Runoff Area=0.380 ac 0.00% Impervious Runoff Depth=2.07"
Flow Length=203' Tc=6.0 min CN=91 Runoff=0.91 cfs 0.066 af

Reach A SYSTEM FLOW: A SYSTEM CONVOLUTED FLOW Inflow=4.89 cfs 0.362 af
Outflow=4.89 cfs 0.362 af

Reach B SYSTEM FLOW: B SYSTEM CONVOLUTED FLOW Inflow=4.69 cfs 0.338 af
Outflow=4.69 cfs 0.338 af

Reach C SYSTEM FLOW: C SYSTEM FLOW Inflow=0.91 cfs 0.066 af
Outflow=0.91 cfs 0.066 af

Pond 12" 136': 12" storm drain Peak Elev=5.08' Inflow=1.41 cfs 0.102 af
12.0" x 136.0' Culvert Outflow=1.41 cfs 0.102 af

Pond 12" 40': 12" storm drain Peak Elev=5.96' Inflow=0.57 cfs 0.041 af
12.0" x 40.0' Culvert Outflow=0.57 cfs 0.041 af

Pond 12" 50': 12" storm drain Peak Elev=6.85' Inflow=1.03 cfs 0.074 af
12.0" x 50.0' Culvert Outflow=1.03 cfs 0.074 af

Pond 12" 60': 12" storm drain Peak Elev=4.81' Inflow=3.28 cfs 0.236 af
12.0" x 60.0' Culvert Outflow=3.28 cfs 0.236 af

Pond 12" 68': 12" storm drain Peak Elev=4.31' Inflow=1.41 cfs 0.102 af
12.0" x 68.0' Culvert Outflow=1.41 cfs 0.102 af

```
Pond 18" 556': 18" storm drain                     Peak Elev=5.28'   Inflow=0.57 cfs  0.041 af
                                         18.0" x 556.0' Culvert   Outflow=0.57 cfs  0.041 af

Pond 18" 740': 18" storm drain                     Peak Elev=5.46'   Inflow=2.99 cfs  0.224 af
                                         18.0" x 740.0' Culvert   Outflow=2.99 cfs  0.224 af

Pond 24" 276': 24" storm drain                     Peak Elev=3.88'   Inflow=1.91 cfs  0.138 af
                                         24.0" x 276.0' Culvert   Outflow=1.91 cfs  0.138 af

Pond 30" 333': 30" storm drain                     Peak Elev=2.80'   Inflow=1.91 cfs  0.138 af
                                         30.0" x 333.0' Culvert   Outflow=1.91 cfs  0.138 af

Pond 36" 215': 36" storm drain                     Peak Elev=1.40'   Inflow=1.91 cfs  0.138 af
                                         36.0" x 215.0' Culvert   Outflow=1.91 cfs  0.138 af

        Total Runoff Area = 8.880 ac   Runoff Volume = 1.711 af   Average Runoff Depth = 2.31"
                            100.00% Pervious = 8.880 ac     0.00% Impervious = 0.000 ac
```

Summary for Subcatchment 37S: (new Subcat)

```
Runoff      =        12.40 cfs @   12.08 hrs,  Volume=          0.944 af,  Depth=  2.55"
```

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=3.00"

	Area (ac)	CN	Description
*	4.440	96	
	4.440		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment A-1: SUBCAT A-1

```
Runoff      =         2.99 cfs @   12.10 hrs,  Volume=          0.224 af,  Depth=  2.07"
```

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=3.00"

	Area (ac)	CN	Description
*	1.300	91	
	1.300		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	105	0.0152	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
1.9	86	0.0023	0.77		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
3.7	225	0.0040	1.02		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.1	416	Total			

Summary for Subcatchment A-2: SUBCAT A-2

```
Runoff      =         1.34 cfs @   12.09 hrs,  Volume=          0.097 af,  Depth=  2.07"
```

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=3.00"

	Area (ac)	CN	Description
*	0.560	91	
	0.560		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	54	0.0056	0.71		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.6	76	0.0171	2.11		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.8	50	0.0040	1.02		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.7	180	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment A-3: SUBCAT A-3

Runoff = 0.57 cfs @ 12.09 hrs, Volume= 0.041 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=3.00"

	Area (ac)	CN	Description
*	0.240	91	
	0.240		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	85	0.0188	1.26		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.9	61	0.0049	1.13		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	20	0.0685	4.21		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.1	166	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment B-1: SUBCAT B-1

Runoff = 3.28 cfs @ 12.09 hrs, Volume= 0.236 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=3.00"

	Area (ac)	CN	Description
*	1.370	91	
	1.370		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	114	0.0184	1.32		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.9	99	0.0121	1.77		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.9	116	0.0026	1.04		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	329	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment B-2: SUBCAT B-2

Runoff = 0.38 cfs @ 12.09 hrs, Volume= 0.028 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=3.00"

	Area (ac)	CN	Description
*	0.160	91	
	0.160		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	86	0.0273	1.46		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
1.0	86	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment B-3: SUBCAT B-3

Runoff = 1.03 cfs @ 12.09 hrs, Volume= 0.074 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=3.00"

	Area (ac)	CN	Description
*	0.430	91	
	0.430		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	121	0.0124	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
1.8	121	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment C-1: SUBCAT C-1

Runoff = 0.91 cfs @ 12.09 hrs, Volume= 0.066 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Rainfall=3.00"

	Area (ac)	CN	Description
*	0.380	91	
	0.380		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	121	0.0107	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
1.0	82	0.0073	1.38		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.9	203	Total, Increased to minimum Tc = 6.0 min			

Summary for Reach A SYSTEM FLOW: A SYSTEM CONVOLUTED FLOW

Inflow Area = 2.100 ac, 0.00% Impervious, Inflow Depth = 2.07" for 2yr event
Inflow = 4.89 cfs @ 12.09 hrs, Volume= 0.362 af
Outflow = 4.89 cfs @ 12.09 hrs, Volume= 0.362 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach B SYSTEM FLOW: B SYSTEM CONVOLUTED FLOW

Inflow Area = 1.960 ac, 0.00% Impervious, Inflow Depth = 2.07" for 2yr event
Inflow = 4.69 cfs @ 12.09 hrs, Volume= 0.338 af
Outflow = 4.69 cfs @ 12.09 hrs, Volume= 0.338 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach C SYSTEM FLOW: C SYSTEM FLOW

Inflow Area = 0.380 ac, 0.00% Impervious, Inflow Depth = 2.07" for 2yr event
Inflow = 0.91 cfs @ 12.09 hrs, Volume= 0.066 af
Outflow = 0.91 cfs @ 12.09 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs

Summary for Pond 12" 136': 12" storm drain

Inflow Area = 0.590 ac, 0.00% Impervious, Inflow Depth = 2.07" for 2yr event
Inflow = 1.41 cfs @ 12.09 hrs, Volume= 0.102 af
Outflow = 1.41 cfs @ 12.09 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 1.41 cfs @ 12.09 hrs, Volume= 0.102 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 5.08' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.30'	**12.0" x 136.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 3.58' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.39 cfs @ 12.09 hrs HW=5.07' TW=4.31' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.39 cfs @ 2.94 fps)

Summary for Pond 12" 40': 12" storm drain

Inflow Area = 0.240 ac, 0.00% Impervious, Inflow Depth = 2.07" for 2yr event
Inflow = 0.57 cfs @ 12.09 hrs, Volume= 0.041 af
Outflow = 0.57 cfs @ 12.09 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.57 cfs @ 12.09 hrs, Volume= 0.041 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 5.96' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.53'	**12.0" x 40.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 4.83' S= 0.0175 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.57 cfs @ 12.09 hrs HW=5.96' TW=5.28' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.57 cfs @ 1.76 fps)

Summary for Pond 12" 50': 12" storm drain

Inflow Area = 0.430 ac, 0.00% Impervious, Inflow Depth = 2.07" for 2yr event
Inflow = 1.03 cfs @ 12.09 hrs, Volume= 0.074 af
Outflow = 1.03 cfs @ 12.09 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min
Primary = 1.03 cfs @ 12.09 hrs, Volume= 0.074 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 6.85' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.25'	**12.0" x 50.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 4.30' S= 0.0390 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.02 cfs @ 12.09 hrs HW=6.85' TW=5.07' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.02 cfs @ 2.08 fps)

Summary for Pond 12" 60': 12" storm drain

Inflow Area = 1.370 ac, 0.00% Impervious, Inflow Depth = 2.07" for 2yr event
Inflow = 3.28 cfs @ 12.09 hrs, Volume= 0.236 af
Outflow = 3.28 cfs @ 12.09 hrs, Volume= 0.236 af, Atten= 0%, Lag= 0.0 min
Primary = 3.28 cfs @ 12.09 hrs, Volume= 0.236 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 4.81' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.06'	**12.0" x 60.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 2.79' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=3.26 cfs @ 12.09 hrs HW=4.80' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 3.26 cfs @ 4.15 fps)

Summary for Pond 12" 68': 12" storm drain

Inflow Area = 0.590 ac, 0.00% Impervious, Inflow Depth = 2.07" for 2yr event
Inflow = 1.41 cfs @ 12.09 hrs, Volume= 0.102 af
Outflow = 1.41 cfs @ 12.09 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 1.41 cfs @ 12.09 hrs, Volume= 0.102 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 4.31' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.58'	**12.0" x 68.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 2.79' S= 0.0116 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.40 cfs @ 12.09 hrs HW=4.31' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.40 cfs @ 2.29 fps)

Summary for Pond 18" 556': 18" storm drain

Inflow Area = 0.240 ac, 0.00% Impervious, Inflow Depth = 2.07" for 2yr event
Inflow = 0.57 cfs @ 12.09 hrs, Volume= 0.041 af
Outflow = 0.57 cfs @ 12.09 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.57 cfs @ 12.09 hrs, Volume= 0.041 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 5.28' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.83'	**18.0" x 556.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 3.17' S= 0.0030 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.57 cfs @ 12.09 hrs HW=5.28' TW=3.87' (Dynamic Tailwater)
↰**1=Culvert** (Outlet Controls 0.57 cfs @ 1.90 fps)

Summary for Pond 18" 740': 18" storm drain

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 2.07" for 2yr event
Inflow = 2.99 cfs @ 12.10 hrs, Volume= 0.224 af
Outflow = 2.99 cfs @ 12.10 hrs, Volume= 0.224 af, Atten= 0%, Lag= 0.0 min
Primary = 2.99 cfs @ 12.10 hrs, Volume= 0.224 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 5.46' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.53'	**18.0" x 740.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= -0.16' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=2.99 cfs @ 12.10 hrs HW=5.46' TW=0.00' (Dynamic Tailwater)
↰**1=Culvert** (Inlet Controls 2.99 cfs @ 2.59 fps)

Summary for Pond 24" 276': 24" storm drain

Inflow Area = 0.800 ac, 0.00% Impervious, Inflow Depth = 2.07" for 2yr event
Inflow = 1.91 cfs @ 12.09 hrs, Volume= 0.138 af
Outflow = 1.91 cfs @ 12.09 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min
Primary = 1.91 cfs @ 12.09 hrs, Volume= 0.138 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 3.88' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.17'	**24.0" x 276.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 2.16' S= 0.0037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.89 cfs @ 12.09 hrs HW=3.87' TW=2.79' (Dynamic Tailwater)
↰**1=Culvert** (Outlet Controls 1.89 cfs @ 2.86 fps)

Summary for Pond 30" 333': 30" storm drain

Inflow Area = 0.800 ac, 0.00% Impervious, Inflow Depth = 2.07" for 2yr event
Inflow = 1.91 cfs @ 12.09 hrs, Volume= 0.138 af
Outflow = 1.91 cfs @ 12.09 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min
Primary = 1.91 cfs @ 12.09 hrs, Volume= 0.138 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs

Peak Elev= 2.80' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2.16'	**30.0" x 333.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 0.82' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.90 cfs @ 12.09 hrs HW=2.79' TW=1.40' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.90 cfs @ 2.92 fps)

Summary for Pond 36" 215': 36" storm drain

Inflow Area = 0.800 ac, 0.00% Impervious, Inflow Depth = 2.07" for 2yr event
Inflow = 1.91 cfs @ 12.09 hrs, Volume= 0.138 af
Outflow = 1.91 cfs @ 12.09 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min
Primary = 1.91 cfs @ 12.09 hrs, Volume= 0.138 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 1.40' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.82'	**36.0" x 215.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= -0.16' S= 0.0046 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.90 cfs @ 12.09 hrs HW=1.40' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 1.90 cfs @ 3.01 fps)

Time span=1.00-72.00 hrs, dt=0.02 hrs, 3551 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 37S: (new Subcat) Runoff Area=4.440 ac 0.00% Impervious Runoff Depth=4.23"
Tc=6.0 min CN=96 Runoff=20.00 cfs 1.567 af

Subcatchment A-1: SUBCAT A-1 Runoff Area=1.300 ac 0.00% Impervious Runoff Depth=3.69"
Flow Length=416' Tc=7.1 min CN=91 Runoff=5.20 cfs 0.400 af

Subcatchment A-2: SUBCAT A-2 Runoff Area=0.560 ac 0.00% Impervious Runoff Depth=3.69"
Flow Length=180' Tc=6.0 min CN=91 Runoff=2.33 cfs 0.172 af

Subcatchment A-3: SUBCAT A-3 Runoff Area=0.240 ac 0.00% Impervious Runoff Depth=3.69"
Flow Length=166' Tc=6.0 min CN=91 Runoff=1.00 cfs 0.074 af

Subcatchment B-1: SUBCAT B-1 Runoff Area=1.370 ac 0.00% Impervious Runoff Depth=3.69"
Flow Length=329' Tc=6.0 min CN=91 Runoff=5.69 cfs 0.421 af

Subcatchment B-2: SUBCAT B-2 Runoff Area=0.160 ac 0.00% Impervious Runoff Depth=3.69"
Flow Length=86' Slope=0.0273 '/' Tc=6.0 min CN=91 Runoff=0.66 cfs 0.049 af

Subcatchment B-3: SUBCAT B-3 Runoff Area=0.430 ac 0.00% Impervious Runoff Depth=3.69"
Flow Length=121' Slope=0.0124 '/' Tc=6.0 min CN=91 Runoff=1.79 cfs 0.132 af

Subcatchment C-1: SUBCAT C-1 Runoff Area=0.380 ac 0.00% Impervious Runoff Depth=3.69"
Flow Length=203' Tc=6.0 min CN=91 Runoff=1.58 cfs 0.117 af

Reach A SYSTEM FLOW: A SYSTEM CONVOLUTED FLOW Inflow=8.49 cfs 0.646 af
Outflow=8.49 cfs 0.646 af

Reach B SYSTEM FLOW: B SYSTEM CONVOLUTED FLOW Inflow=8.14 cfs 0.603 af
Outflow=8.14 cfs 0.603 af

Reach C SYSTEM FLOW: C SYSTEM FLOW Inflow=1.58 cfs 0.117 af
Outflow=1.58 cfs 0.117 af

Pond 12" 136': 12" storm drain Peak Elev=5.58' Inflow=2.45 cfs 0.181 af
12.0" x 136.0' Culvert Outflow=2.45 cfs 0.181 af

Pond 12" 40': 12" storm drain Peak Elev=6.12' Inflow=1.00 cfs 0.074 af
12.0" x 40.0' Culvert Outflow=1.00 cfs 0.074 af

Pond 12" 50': 12" storm drain Peak Elev=7.11' Inflow=1.79 cfs 0.132 af
12.0" x 50.0' Culvert Outflow=1.79 cfs 0.132 af

Pond 12" 60': 12" storm drain Peak Elev=7.19' Inflow=5.69 cfs 0.421 af
12.0" x 60.0' Culvert Outflow=5.69 cfs 0.421 af

Pond 12" 68': 12" storm drain Peak Elev=4.75' Inflow=2.45 cfs 0.181 af
12.0" x 68.0' Culvert Outflow=2.45 cfs 0.181 af

Pond 18" 556': 18" storm drain Peak Elev=5.44' Inflow=1.00 cfs 0.074 af
18.0" x 556.0' Culvert Outflow=1.00 cfs 0.074 af

Pond 18" 740': 18" storm drain Peak Elev=5.87' Inflow=5.20 cfs 0.400 af
18.0" x 740.0' Culvert Outflow=5.20 cfs 0.400 af

Pond 24" 276': 24" storm drain Peak Elev=4.12' Inflow=3.32 cfs 0.246 af
24.0" x 276.0' Culvert Outflow=3.32 cfs 0.246 af

Pond 30" 333': 30" storm drain Peak Elev=3.01' Inflow=3.32 cfs 0.246 af
30.0" x 333.0' Culvert Outflow=3.32 cfs 0.246 af

Pond 36" 215': 36" storm drain Peak Elev=1.59' Inflow=3.32 cfs 0.246 af
36.0" x 215.0' Culvert Outflow=3.32 cfs 0.246 af

Total Runoff Area = 8.880 ac Runoff Volume = 2.933 af Average Runoff Depth = 3.96"
100.00% Pervious = 8.880 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 37S: (new Subcat)

Runoff = 20.00 cfs @ 12.08 hrs, Volume= 1.567 af, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10yr Rainfall=4.70"

	Area (ac)	CN	Description
*	4.440	96	
	4.440		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment A-1: SUBCAT A-1

Runoff = 5.20 cfs @ 12.10 hrs, Volume= 0.400 af, Depth= 3.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10yr Rainfall=4.70"

	Area (ac)	CN	Description
*	1.300	91	
	1.300		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	105	0.0152	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
1.9	86	0.0023	0.77		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
3.7	225	0.0040	1.02		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.1	416	Total			

Summary for Subcatchment A-2: SUBCAT A-2

Runoff = 2.33 cfs @ 12.08 hrs, Volume= 0.172 af, Depth= 3.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10yr Rainfall=4.70"

	Area (ac)	CN	Description
*	0.560	91	
	0.560		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	54	0.0056	0.71		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.6	76	0.0171	2.11		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.8	50	0.0040	1.02		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.7	180	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment A-3: SUBCAT A-3

Runoff = 1.00 cfs @ 12.08 hrs, Volume= 0.074 af, Depth= 3.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10yr Rainfall=4.70"

	Area (ac)	CN	Description
*	0.240	91	
	0.240		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	85	0.0188	1.26		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.9	61	0.0049	1.13		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	20	0.0685	4.21		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.1	166	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment B-1: SUBCAT B-1

Runoff = 5.69 cfs @ 12.08 hrs, Volume= 0.421 af, Depth= 3.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10yr Rainfall=4.70"

	Area (ac)	CN	Description
*	1.370	91	
	1.370		Pervious Area

```
   Tc  Length   Slope  Velocity  Capacity  Description
(min)  (feet)  (ft/ft)  (ft/sec)     (cfs)
  1.4     114  0.0184      1.32            Sheet Flow,
                                           Smooth surfaces   n= 0.011   P2= 3.00"
  0.9      99  0.0121      1.77            Shallow Concentrated Flow,
                                           Unpaved   Kv= 16.1 fps
  1.9     116  0.0026      1.04            Shallow Concentrated Flow,
                                           Paved   Kv= 20.3 fps
  4.2     329  Total,  Increased to minimum Tc = 6.0 min
```

Summary for Subcatchment B-2: SUBCAT B-2

```
Runoff      =        0.66 cfs @   12.08 hrs,  Volume=          0.049 af,  Depth=  3.69"
```

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10yr Rainfall=4.70"

```
  Area (ac)    CN   Description
*     0.160    91
      0.160         Pervious Area

   Tc  Length   Slope  Velocity  Capacity  Description
(min)  (feet)  (ft/ft)  (ft/sec)     (cfs)
  1.0      86  0.0273      1.46            Sheet Flow,
                                           Smooth surfaces   n= 0.011   P2= 3.00"
  1.0      86  Total,  Increased to minimum Tc = 6.0 min
```

Summary for Subcatchment B-3: SUBCAT B-3

```
Runoff      =        1.79 cfs @   12.08 hrs,  Volume=          0.132 af,  Depth=  3.69"
```

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10yr Rainfall=4.70"

```
  Area (ac)    CN   Description
*     0.430    91
      0.430         Pervious Area

   Tc  Length   Slope  Velocity  Capacity  Description
(min)  (feet)  (ft/ft)  (ft/sec)     (cfs)
  1.8     121  0.0124      1.14            Sheet Flow,
                                           Smooth surfaces   n= 0.011   P2= 3.00"
  1.8     121  Total,  Increased to minimum Tc = 6.0 min
```

Summary for Subcatchment C-1: SUBCAT C-1

```
Runoff      =        1.58 cfs @   12.08 hrs,  Volume=          0.117 af,  Depth=  3.69"
```

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10yr Rainfall=4.70"

	Area (ac)	CN	Description
*	0.380	91	
	0.380		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	121	0.0107	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
1.0	82	0.0073	1.38		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.9	203	Total, Increased to minimum Tc = 6.0 min			

Summary for Reach A SYSTEM FLOW: A SYSTEM CONVOLUTED FLOW

```
Inflow Area =       2.100 ac,   0.00% Impervious,  Inflow Depth =   3.69"   for  10yr event
Inflow      =       8.49 cfs @   12.09 hrs,  Volume=          0.646 af
Outflow     =       8.49 cfs @   12.09 hrs,  Volume=          0.646 af,  Atten= 0%,  Lag= 0.0 min
```

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach B SYSTEM FLOW: B SYSTEM CONVOLUTED FLOW

```
Inflow Area =       1.960 ac,   0.00% Impervious,  Inflow Depth =   3.69"   for  10yr event
Inflow      =       8.14 cfs @   12.08 hrs,  Volume=          0.603 af
Outflow     =       8.14 cfs @   12.08 hrs,  Volume=          0.603 af,  Atten= 0%,  Lag= 0.0 min
```

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach C SYSTEM FLOW: C SYSTEM FLOW

```
Inflow Area =       0.380 ac,   0.00% Impervious,  Inflow Depth =   3.69"   for  10yr event
Inflow      =       1.58 cfs @   12.08 hrs,  Volume=          0.117 af
Outflow     =       1.58 cfs @   12.08 hrs,  Volume=          0.117 af,  Atten= 0%,  Lag= 0.0 min
```

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs

Summary for Pond 12" 136': 12" storm drain

```
Inflow Area =       0.590 ac,   0.00% Impervious,  Inflow Depth =   3.69"   for  10yr event
Inflow      =       2.45 cfs @   12.08 hrs,  Volume=          0.181 af
Outflow     =       2.45 cfs @   12.08 hrs,  Volume=          0.181 af,  Atten= 0%,  Lag= 0.0 min
Primary     =       2.45 cfs @   12.08 hrs,  Volume=          0.181 af
```

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 5.58' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.30'	**12.0" x 136.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 3.58' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=2.38 cfs @ 12.08 hrs HW=5.56' TW=4.75' (Dynamic Tailwater)
↰**1=Culvert** (Outlet Controls 2.38 cfs @ 3.10 fps)

Summary for Pond 12" 40': 12" storm drain

Inflow Area = 0.240 ac, 0.00% Impervious, Inflow Depth = 3.69" for 10yr event
Inflow = 1.00 cfs @ 12.08 hrs, Volume= 0.074 af
Outflow = 1.00 cfs @ 12.08 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min
Primary = 1.00 cfs @ 12.08 hrs, Volume= 0.074 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 6.12' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.53'	**12.0" x 40.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 4.83' S= 0.0175 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.99 cfs @ 12.08 hrs HW=6.12' TW=5.44' (Dynamic Tailwater)
↰**1=Culvert** (Inlet Controls 0.99 cfs @ 2.06 fps)

Summary for Pond 12" 50': 12" storm drain

Inflow Area = 0.430 ac, 0.00% Impervious, Inflow Depth = 3.69" for 10yr event
Inflow = 1.79 cfs @ 12.08 hrs, Volume= 0.132 af
Outflow = 1.79 cfs @ 12.08 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.0 min
Primary = 1.79 cfs @ 12.08 hrs, Volume= 0.132 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 7.11' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.25'	**12.0" x 50.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 4.30' S= 0.0390 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.78 cfs @ 12.08 hrs HW=7.10' TW=5.56' (Dynamic Tailwater)
↰**1=Culvert** (Inlet Controls 1.78 cfs @ 2.48 fps)

Summary for Pond 12" 60': 12" storm drain

Inflow Area = 1.370 ac, 0.00% Impervious, Inflow Depth = 3.69" for 10yr event
Inflow = 5.69 cfs @ 12.08 hrs, Volume= 0.421 af
Outflow = 5.69 cfs @ 12.08 hrs, Volume= 0.421 af, Atten= 0%, Lag= 0.0 min
Primary = 5.69 cfs @ 12.08 hrs, Volume= 0.421 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 7.19' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.06'	**12.0" x 60.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 2.79' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=5.66 cfs @ 12.08 hrs HW=7.15' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 5.66 cfs @ 7.20 fps)

Summary for Pond 12" 68': 12" storm drain

Inflow Area = 0.590 ac, 0.00% Impervious, Inflow Depth = 3.69" for 10yr event
Inflow = 2.45 cfs @ 12.08 hrs, Volume= 0.181 af
Outflow = 2.45 cfs @ 12.08 hrs, Volume= 0.181 af, Atten= 0%, Lag= 0.0 min
Primary = 2.45 cfs @ 12.08 hrs, Volume= 0.181 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 4.75' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.58'	**12.0" x 68.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 2.79' S= 0.0116 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=2.44 cfs @ 12.08 hrs HW=4.75' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.44 cfs @ 3.10 fps)

Summary for Pond 18" 556': 18" storm drain

Inflow Area = 0.240 ac, 0.00% Impervious, Inflow Depth = 3.69" for 10yr event
Inflow = 1.00 cfs @ 12.08 hrs, Volume= 0.074 af
Outflow = 1.00 cfs @ 12.08 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min
Primary = 1.00 cfs @ 12.08 hrs, Volume= 0.074 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 5.44' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.83'	**18.0" x 556.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 3.17' S= 0.0030 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=0.98 cfs @ 12.08 hrs HW=5.44' TW=4.12' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.98 cfs @ 2.15 fps)

Summary for Pond 18" 740': 18" storm drain

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 3.69" for 10yr event
Inflow = 5.20 cfs @ 12.10 hrs, Volume= 0.400 af
Outflow = 5.20 cfs @ 12.10 hrs, Volume= 0.400 af, Atten= 0%, Lag= 0.0 min
Primary = 5.20 cfs @ 12.10 hrs, Volume= 0.400 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 5.87' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.53'	**18.0" x 740.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= -0.16' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=5.20 cfs @ 12.10 hrs HW=5.87' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 5.20 cfs @ 3.11 fps)

Summary for Pond 24" 276': 24" storm drain

Inflow Area = 0.800 ac, 0.00% Impervious, Inflow Depth = 3.69" for 10yr event
Inflow = 3.32 cfs @ 12.08 hrs, Volume= 0.246 af
Outflow = 3.32 cfs @ 12.08 hrs, Volume= 0.246 af, Atten= 0%, Lag= 0.0 min
Primary = 3.32 cfs @ 12.08 hrs, Volume= 0.246 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 4.12' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.17'	**24.0" x 276.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 2.16' S= 0.0037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=3.28 cfs @ 12.08 hrs HW=4.12' TW=3.01' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 3.28 cfs @ 3.28 fps)

Summary for Pond 30" 333': 30" storm drain

Inflow Area = 0.800 ac, 0.00% Impervious, Inflow Depth = 3.69" for 10yr event
Inflow = 3.32 cfs @ 12.08 hrs, Volume= 0.246 af
Outflow = 3.32 cfs @ 12.08 hrs, Volume= 0.246 af, Atten= 0%, Lag= 0.0 min
Primary = 3.32 cfs @ 12.08 hrs, Volume= 0.246 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs

```
Peak Elev= 3.01' @ 12.09 hrs

Device   Routing           Invert   Outlet Devices
   #1    Primary            2.16'   30.0"  x 333.0' long Culvert
                                    CPP, projecting, no headwall,  Ke= 0.900
                                    Outlet Invert= 0.82'   S= 0.0040 '/'   Cc= 0.900
                                    n= 0.013  Corrugated PE, smooth interior

Primary OutFlow  Max=3.29 cfs @ 12.08 hrs  HW=3.01'  TW=1.59'   (Dynamic Tailwater)
└─1=Culvert  (Outlet Controls 3.29 cfs @ 3.36 fps)
```

Summary for Pond 36" 215': 36" storm drain

```
Inflow Area =        0.800 ac,    0.00% Impervious,  Inflow Depth =   3.69"    for  10yr event
Inflow      =        3.32 cfs @   12.08 hrs,  Volume=          0.246 af
Outflow     =        3.32 cfs @   12.08 hrs,  Volume=          0.246 af,  Atten= 0%,  Lag= 0.0 min
Primary     =        3.32 cfs @   12.08 hrs,  Volume=          0.246 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 1.59' @ 12.08 hrs

Device   Routing           Invert   Outlet Devices
   #1    Primary            0.82'   36.0"  x 215.0' long Culvert
                                    CPP, projecting, no headwall,  Ke= 0.900
                                    Outlet Invert= -0.16'   S= 0.0046 '/'   Cc= 0.900
                                    n= 0.013  Corrugated PE, smooth interior

Primary OutFlow  Max=3.30 cfs @ 12.08 hrs  HW=1.59'  TW=0.00'   (Dynamic Tailwater)
└─1=Culvert  (Barrel Controls 3.30 cfs @ 3.48 fps)
```

Time span=1.00-72.00 hrs, dt=0.02 hrs, 3551 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 37S: (new Subcat) Runoff Area=4.440 ac 0.00% Impervious Runoff Depth=5.03"
Tc=6.0 min CN=96 Runoff=23.55 cfs 1.861 af

Subcatchment A-1: SUBCAT A-1 Runoff Area=1.300 ac 0.00% Impervious Runoff Depth=4.47"
Flow Length=416' Tc=7.1 min CN=91 Runoff=6.23 cfs 0.484 af

Subcatchment A-2: SUBCAT A-2 Runoff Area=0.560 ac 0.00% Impervious Runoff Depth=4.47"
Flow Length=180' Tc=6.0 min CN=91 Runoff=2.79 cfs 0.209 af

Subcatchment A-3: SUBCAT A-3 Runoff Area=0.240 ac 0.00% Impervious Runoff Depth=4.47"
Flow Length=166' Tc=6.0 min CN=91 Runoff=1.19 cfs 0.089 af

Subcatchment B-1: SUBCAT B-1 Runoff Area=1.370 ac 0.00% Impervious Runoff Depth=4.47"
Flow Length=329' Tc=6.0 min CN=91 Runoff=6.82 cfs 0.510 af

Subcatchment B-2: SUBCAT B-2 Runoff Area=0.160 ac 0.00% Impervious Runoff Depth=4.47"
Flow Length=86' Slope=0.0273 '/' Tc=6.0 min CN=91 Runoff=0.80 cfs 0.060 af

Subcatchment B-3: SUBCAT B-3 Runoff Area=0.430 ac 0.00% Impervious Runoff Depth=4.47"
Flow Length=121' Slope=0.0124 '/' Tc=6.0 min CN=91 Runoff=2.14 cfs 0.160 af

Subcatchment C-1: SUBCAT C-1 Runoff Area=0.380 ac 0.00% Impervious Runoff Depth=4.47"
Flow Length=203' Tc=6.0 min CN=91 Runoff=1.89 cfs 0.142 af

Reach A SYSTEM FLOW: A SYSTEM CONVOLUTED FLOW Inflow=10.17 cfs 0.782 af
Outflow=10.17 cfs 0.782 af

Reach B SYSTEM FLOW: B SYSTEM CONVOLUTED FLOW Inflow=9.75 cfs 0.730 af
Outflow=9.75 cfs 0.730 af

Reach C SYSTEM FLOW: C SYSTEM FLOW Inflow=1.89 cfs 0.142 af
Outflow=1.89 cfs 0.142 af

Pond 12" 136': 12" storm drain Peak Elev=6.35' Inflow=2.94 cfs 0.220 af
12.0" x 136.0' Culvert Outflow=2.94 cfs 0.220 af

Pond 12" 40': 12" storm drain Peak Elev=6.19' Inflow=1.19 cfs 0.089 af
12.0" x 40.0' Culvert Outflow=1.19 cfs 0.089 af

Pond 12" 50': 12" storm drain Peak Elev=7.26' Inflow=2.14 cfs 0.160 af
12.0" x 50.0' Culvert Outflow=2.14 cfs 0.160 af

Pond 12" 60': 12" storm drain Peak Elev=8.77' Inflow=6.82 cfs 0.510 af
12.0" x 60.0' Culvert Outflow=6.82 cfs 0.510 af

Pond 12" 68': 12" storm drain Peak Elev=5.05' Inflow=2.94 cfs 0.220 af
12.0" x 68.0' Culvert Outflow=2.94 cfs 0.220 af

Pond 18" 556': 18" storm drain Peak Elev=5.51' Inflow=1.19 cfs 0.089 af
18.0" x 556.0' Culvert Outflow=1.19 cfs 0.089 af

Pond 18" 740': 18" storm drain Peak Elev=6.14' Inflow=6.23 cfs 0.484 af
18.0" x 740.0' Culvert Outflow=6.23 cfs 0.484 af

Pond 24" 276': 24" storm drain Peak Elev=4.22' Inflow=3.98 cfs 0.298 af
24.0" x 276.0' Culvert Outflow=3.98 cfs 0.298 af

Pond 30" 333': 30" storm drain Peak Elev=3.09' Inflow=3.98 cfs 0.298 af
30.0" x 333.0' Culvert Outflow=3.98 cfs 0.298 af

Pond 36" 215': 36" storm drain Peak Elev=1.67' Inflow=3.98 cfs 0.298 af
36.0" x 215.0' Culvert Outflow=3.98 cfs 0.298 af

Total Runoff Area = 8.880 ac Runoff Volume = 3.514 af Average Runoff Depth = 4.75"
100.00% Pervious = 8.880 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 37S: (new Subcat)

Runoff = 23.55 cfs @ 12.08 hrs, Volume= 1.861 af, Depth= 5.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25yr Rainfall=5.50"

	Area (ac)	CN	Description
*	4.440	96	
	4.440		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment A-1: SUBCAT A-1

Runoff = 6.23 cfs @ 12.10 hrs, Volume= 0.484 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25yr Rainfall=5.50"

	Area (ac)	CN	Description
*	1.300	91	
	1.300		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	105	0.0152	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
1.9	86	0.0023	0.77		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
3.7	225	0.0040	1.02		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.1	416	Total			

Summary for Subcatchment A-2: SUBCAT A-2

Runoff = 2.79 cfs @ 12.08 hrs, Volume= 0.209 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25yr Rainfall=5.50"

	Area (ac)	CN	Description
*	0.560	91	
	0.560		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	54	0.0056	0.71		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.6	76	0.0171	2.11		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.8	50	0.0040	1.02		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.7	180	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment A-3: SUBCAT A-3

Runoff = 1.19 cfs @ 12.08 hrs, Volume= 0.089 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25yr Rainfall=5.50"

	Area (ac)	CN	Description
*	0.240	91	
	0.240		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	85	0.0188	1.26		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.9	61	0.0049	1.13		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	20	0.0685	4.21		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.1	166	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment B-1: SUBCAT B-1

Runoff = 6.82 cfs @ 12.08 hrs, Volume= 0.510 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25yr Rainfall=5.50"

	Area (ac)	CN	Description
*	1.370	91	
	1.370		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	114	0.0184	1.32		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.9	99	0.0121	1.77		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.9	116	0.0026	1.04		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	329	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment B-2: SUBCAT B-2

Runoff = 0.80 cfs @ 12.08 hrs, Volume= 0.060 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25yr Rainfall=5.50"

	Area (ac)	CN	Description
*	0.160	91	
	0.160		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	86	0.0273	1.46		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
1.0	86	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment B-3: SUBCAT B-3

Runoff = 2.14 cfs @ 12.08 hrs, Volume= 0.160 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25yr Rainfall=5.50"

	Area (ac)	CN	Description
*	0.430	91	
	0.430		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	121	0.0124	1.14		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
1.8	121	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment C-1: SUBCAT C-1

Runoff = 1.89 cfs @ 12.08 hrs, Volume= 0.142 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25yr Rainfall=5.50"

	Area (ac)	CN	Description
*	0.380	91	
	0.380		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	121	0.0107	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
1.0	82	0.0073	1.38		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.9	203	Total, Increased to minimum Tc = 6.0 min			

Summary for Reach A SYSTEM FLOW: A SYSTEM CONVOLUTED FLOW

Inflow Area = 2.100 ac, 0.00% Impervious, Inflow Depth = 4.47" for 25yr event
Inflow = 10.17 cfs @ 12.09 hrs, Volume= 0.782 af
Outflow = 10.17 cfs @ 12.09 hrs, Volume= 0.782 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach B SYSTEM FLOW: B SYSTEM CONVOLUTED FLOW

Inflow Area = 1.960 ac, 0.00% Impervious, Inflow Depth = 4.47" for 25yr event
Inflow = 9.75 cfs @ 12.08 hrs, Volume= 0.730 af
Outflow = 9.75 cfs @ 12.08 hrs, Volume= 0.730 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach C SYSTEM FLOW: C SYSTEM FLOW

Inflow Area = 0.380 ac, 0.00% Impervious, Inflow Depth = 4.47" for 25yr event
Inflow = 1.89 cfs @ 12.08 hrs, Volume= 0.142 af
Outflow = 1.89 cfs @ 12.08 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs

Summary for Pond 12" 136': 12" storm drain

Inflow Area = 0.590 ac, 0.00% Impervious, Inflow Depth = 4.47" for 25yr event
Inflow = 2.94 cfs @ 12.08 hrs, Volume= 0.220 af
Outflow = 2.94 cfs @ 12.08 hrs, Volume= 0.220 af, Atten= 0%, Lag= 0.0 min
Primary = 2.94 cfs @ 12.08 hrs, Volume= 0.220 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 6.35' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.30'	**12.0" x 136.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 3.58' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=2.86 cfs @ 12.08 hrs HW=6.30' TW=5.04' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.86 cfs @ 3.64 fps)

Summary for Pond 12" 40': 12" storm drain

Inflow Area = 0.240 ac, 0.00% Impervious, Inflow Depth = 4.47" for 25yr event
Inflow = 1.19 cfs @ 12.08 hrs, Volume= 0.089 af
Outflow = 1.19 cfs @ 12.08 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.0 min
Primary = 1.19 cfs @ 12.08 hrs, Volume= 0.089 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 6.19' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.53'	**12.0" x 40.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 4.83' S= 0.0175 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=1.19 cfs @ 12.08 hrs HW=6.19' TW=5.51' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.19 cfs @ 2.18 fps)

Summary for Pond 12" 50': 12" storm drain

Inflow Area = 0.430 ac, 0.00% Impervious, Inflow Depth = 4.47" for 25yr event
Inflow = 2.14 cfs @ 12.08 hrs, Volume= 0.160 af
Outflow = 2.14 cfs @ 12.08 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min
Primary = 2.14 cfs @ 12.08 hrs, Volume= 0.160 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 7.26' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.25'	**12.0" x 50.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 4.30' S= 0.0390 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=2.13 cfs @ 12.08 hrs HW=7.26' TW=6.30' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.13 cfs @ 2.71 fps)

Summary for Pond 12" 60': 12" storm drain

```
Inflow Area =      1.370 ac,   0.00% Impervious,  Inflow Depth =   4.47"    for  25yr event
Inflow      =      6.82 cfs @   12.08 hrs,  Volume=          0.510 af
Outflow     =      6.82 cfs @   12.08 hrs,  Volume=          0.510 af,  Atten= 0%,  Lag= 0.0 min
Primary     =      6.82 cfs @   12.08 hrs,  Volume=          0.510 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 8.77' @ 12.08 hrs

Device   Routing          Invert   Outlet Devices
   #1    Primary           3.06'   12.0"  x 60.0' long Culvert  CPP, projecting, no headwall,  Ke= 0.900
                                   Outlet Invert= 2.79'   S= 0.0045 '/'   Cc= 0.900
                                   n= 0.013  Corrugated PE, smooth interior

Primary OutFlow  Max=6.78 cfs @ 12.08 hrs  HW=8.72'  TW=0.00'   (Dynamic Tailwater)
└─1=Culvert  (Inlet Controls 6.78 cfs @ 8.63 fps)
```

Summary for Pond 12" 68': 12" storm drain

```
Inflow Area =      0.590 ac,   0.00% Impervious,  Inflow Depth =   4.47"    for  25yr event
Inflow      =      2.94 cfs @   12.08 hrs,  Volume=          0.220 af
Outflow     =      2.94 cfs @   12.08 hrs,  Volume=          0.220 af,  Atten= 0%,  Lag= 0.0 min
Primary     =      2.94 cfs @   12.08 hrs,  Volume=          0.220 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 5.05' @ 12.08 hrs

Device   Routing          Invert   Outlet Devices
   #1    Primary           3.58'   12.0"  x 68.0' long Culvert  CPP, projecting, no headwall,  Ke= 0.900
                                   Outlet Invert= 2.79'   S= 0.0116 '/'   Cc= 0.900
                                   n= 0.013  Corrugated PE, smooth interior

Primary OutFlow  Max=2.92 cfs @ 12.08 hrs  HW=5.04'  TW=0.00'   (Dynamic Tailwater)
└─1=Culvert  (Inlet Controls 2.92 cfs @ 3.72 fps)
```

Summary for Pond 18" 556': 18" storm drain

```
Inflow Area =      0.240 ac,   0.00% Impervious,  Inflow Depth =   4.47"    for  25yr event
Inflow      =      1.19 cfs @   12.08 hrs,  Volume=          0.089 af
Outflow     =      1.19 cfs @   12.08 hrs,  Volume=          0.089 af,  Atten= 0%,  Lag= 0.0 min
Primary     =      1.19 cfs @   12.08 hrs,  Volume=          0.089 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 5.51' @ 12.09 hrs

Device   Routing          Invert   Outlet Devices
   #1    Primary           4.83'   18.0"  x 556.0' long Culvert
                                   CPP, projecting, no headwall,  Ke= 0.900
                                   Outlet Invert= 3.17'   S= 0.0030 '/'   Cc= 0.900
                                   n= 0.013  Corrugated PE, smooth interior
```

Primary OutFlow Max=1.18 cfs @ 12.08 hrs HW=5.51' TW=4.22' (Dynamic Tailwater)
⮤**1=Culvert** (Outlet Controls 1.18 cfs @ 2.23 fps)

Summary for Pond 18" 740': 18" storm drain

Inflow Area = 1.300 ac, 0.00% Impervious, Inflow Depth = 4.47" for 25yr event
Inflow = 6.23 cfs @ 12.10 hrs, Volume= 0.484 af
Outflow = 6.23 cfs @ 12.10 hrs, Volume= 0.484 af, Atten= 0%, Lag= 0.0 min
Primary = 6.23 cfs @ 12.10 hrs, Volume= 0.484 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 6.14' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.53'	**18.0" x 740.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= -0.16' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=6.22 cfs @ 12.10 hrs HW=6.14' TW=0.00' (Dynamic Tailwater)
⮤**1=Culvert** (Inlet Controls 6.22 cfs @ 3.52 fps)

Summary for Pond 24" 276': 24" storm drain

Inflow Area = 0.800 ac, 0.00% Impervious, Inflow Depth = 4.47" for 25yr event
Inflow = 3.98 cfs @ 12.08 hrs, Volume= 0.298 af
Outflow = 3.98 cfs @ 12.08 hrs, Volume= 0.298 af, Atten= 0%, Lag= 0.0 min
Primary = 3.98 cfs @ 12.08 hrs, Volume= 0.298 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 4.22' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.17'	**24.0" x 276.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 2.16' S= 0.0037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=3.93 cfs @ 12.08 hrs HW=4.22' TW=3.09' (Dynamic Tailwater)
⮤**1=Culvert** (Outlet Controls 3.93 cfs @ 3.42 fps)

Summary for Pond 30" 333': 30" storm drain

Inflow Area = 0.800 ac, 0.00% Impervious, Inflow Depth = 4.47" for 25yr event
Inflow = 3.98 cfs @ 12.08 hrs, Volume= 0.298 af
Outflow = 3.98 cfs @ 12.08 hrs, Volume= 0.298 af, Atten= 0%, Lag= 0.0 min
Primary = 3.98 cfs @ 12.08 hrs, Volume= 0.298 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs

Peak Elev= 3.09' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	2.16'	**30.0" x 333.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 0.82' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=3.94 cfs @ 12.08 hrs HW=3.09' TW=1.66' (Dynamic Tailwater)
↰**1=Culvert** (Outlet Controls 3.94 cfs @ 3.51 fps)

Summary for Pond 36" 215': 36" storm drain

Inflow Area = 0.800 ac, 0.00% Impervious, Inflow Depth = 4.47" for 25yr event
Inflow = 3.98 cfs @ 12.08 hrs, Volume= 0.298 af
Outflow = 3.98 cfs @ 12.08 hrs, Volume= 0.298 af, Atten= 0%, Lag= 0.0 min
Primary = 3.98 cfs @ 12.08 hrs, Volume= 0.298 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 1.67' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.82'	**36.0" x 215.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= -0.16' S= 0.0046 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior

Primary OutFlow Max=3.96 cfs @ 12.08 hrs HW=1.66' TW=0.00' (Dynamic Tailwater)
↰**1=Culvert** (Barrel Controls 3.96 cfs @ 3.65 fps)

ATTACHMENT B

WATER QUALITY COMPUTATIONS

Midtown Water Quality Summary, Isolator Row Sizing and Summary of Peak Discharges

System	Tributary Area (SF)	Tributary Area (acres)	Treatment Approach	Required Filterra Sizing (sf)/Number of Storm Treats (ea)	Filterra Size (sf)/Storm Treats Provided (ea)	Water Quality Volume (CF)	1 Yr. Peak Flow (CFS)	# Chambers (SC740) Required	Storage Volume Required (CF)*	"Brentwood Tanks Required (See Plan for Dimension)"	"Brentwood Tanks Provided (1.5' x 3' x 2)"	"Peak Flow 2 Year Storm (CFS)"	"Peak Flow 25 Year Storm (CFS)"
A	36,988	0.85	Subsurface Filterra Media	12'x8'	12'x15'	3,082	2	10	682	76	84	2.32	4.50
B	13,078	0.30	Boxless Filterra	4'x'6'	4'x'6	1,090	0.71	4	273	31	30*	0.82	1.59
C	13,103	0.30	Boxless Filterra	4'x'6'	4'x'6	1,092	0.71	4	273	31	30*	0.82	1.59
D	19,761	0.45	StormTreat Units	2.00	2.00	1,647	1.07	6	409	126	126	1.24	2.40
E	3,624	0.08	Filterra	4'x'6'	4'x'6	302	0.2	1	68	8	16	0.23	0.44
F	6,373	0.15	Filterra	4'x'6'	4'x'6	531	0.34	2	136	16	16	0.40	0.78
G	2,688	0.06	Filterra	4'x'6'	4'x'6	224	0.15	1	68	8	8	0.17	0.33
H	3,184	0.07	Filterra	4'x'6'	4'x'6	265	0.17	1	68	8	8	0.20	0.39
I	5,497	0.13	Filterra	4'x'6'	4'x'6	458	0.3	2	136	16	16	0.34	0.67
J	4,160	0.10	Filterra	4'x'6'	4'x'6	347	0.22	2	136	16	16	0.26	0.51
K	7,318	0.17	Filterra	4'x'6'	4'x'6	610	0.4	2	136	16	16	0.46	0.89
L	5,295	0.12	Filterra	4'x'6'	4'x'6	441	0.29	2	136	16	16	0.33	0.64
M	3,292	0.08	Filterra	4'x'6'	4'x'6	274	0.18	1	68	8	16	0.21	0.40
N	4426	0.10	Filterra	4'x'6'	4'x'6	369	0.24	2	136	16	16	0.28	0.54
O	3,115	0.07	Filterra	4'x'6'	4'x'6	260	0.22	2	136	16	16	0.20	0.38
P	4,700	0.11	Filterra	4'x'6'	4'x'6	392	0.25	2	136	16	16	0.29	0.57
Q	5,295	0.12	Filterra	4'x'6'	4'x'6	441	0.29	2	136	16	16	0.33	0.64
R	4,173	0.10	Filterra	4'x'6'	4'x'6	348	0.23	2	136	16	16	0.26	0.51
S	6,447	0.15	Filterra	4'x'6'	4'x'6	537	0.35	2	136	16	16	0.40	0.78

*Based on StormTech 740 chambers storage capacity of 68.2 CF per chamber

*Additional Storage is provided in inspection manholes.

Systems A & D have 18" storm drain downstream of roof drain connection.

ATTACHMENT C

ORIFICE DRAWDOWN COMPUTATIONS

STORMTREATS/BRENTWOODS

DRAWDOWN CALCULATIONS
MIDTOWN - PORTLAND MAINE

3062B
JRP
NOV 2014

ORIFICE DIAMETER FOR STORMTREATS

Depth (ft)	Surface Area (sq.ft)	Area End (sq.ft)	Area End Depth (ft)	Volume (c.f)	Head (ft)	Orifice Flow (cfs)	Drawdown Time (secs)	Drawdown Time (hours)
3.00	565.00	565.00	1.00	565.00	3.42	0.0090	62943.71	17.484
2.00	565.00	565.00	1.00	565.00	2.42	0.0076	74826.89	20.785
1.00	565.00	565.00	1.00	565.00	1.42	0.0058	97683.50	27.134
0.00	565.00	0.00	0.00	0.00	0.42	0.0031	0.00	0.000
							TOTAL	***65.404***

CA $(2gh)^{1/2}$

Orifice Diameter	0.43	inch	
Area	0.0010	sq.ft	
Head	2.53	feet	
g	32.174	ft/s^2	
C	0.6		Orifice/Grate

DESIRED ORIFICE FLOW = 0.089CFS WHICH IS EQUAL TO 2GPM PER STORMTREAT (I.E. 4GPM = 0.0089CFS)

ATTACHMENT D

OPERATIONS & MAINTENANCE MANUAL

INSPECTION AND MAINTENANCE MANUAL FOR STORMWATER MANAGEMENT AND RELATED STORMWATER FACILITIES

midtown
PORTLAND, MAINE

PREPARED FOR:

THE FEDERATED COMPANIES
3301 NE 1ST AVENUE, SUITE M-302
MIAMI, FLORIDA 33137

PREPARED BY:

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NOVEMBER 2014

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APPENDICES

I. INTRODUCTION

Relatively complex stormwater management facilities are commonly installed in development projects including, commercial facilities, and many other developments. The complexity and goals of these systems vary with the nature of the receiving water, as well as the type of development. Runoff from developed areas of the project, including rooftops, paved, or lawn areas typically contain materials that can impact the receiving waters. Source control and the installation of wet ponds, infiltration galleries, and proprietary water quality units such as StormFilter®, Filterra®, and StormTreat™ units are often combined with pretreatment measures or vegetated buffer strips and other best management practices are also among the options that can significantly reduce the non-point pollution discharge from the developed area. These measures are particularly important to projects in the watersheds of sensitive water bodies, or projects with potential impacts to groundwater. With the increased cost of land and development, there is an increased tendency to construct portions of the stormwater management systems underground.

The effectiveness of water quality management provisions and other components of the stormwater management system are dependent on their design, upkeep, and maintenance to assure they meet their intended function over an extended period of years. It is critical that the stormwater management facilities are regularly inspected, and that maintenance is performed on an as-needed basis. It must also be recognized that the effectiveness of these facilities, and their maintenance requirements, are related to the stormwater drainage facilities that collect and transport the flow to the ponds, infiltration galleries, and other treatment measures. Thus, maintenance should be directed to the total system, not just the pond or primary stormwater management facility. Chapter 32 of the City of Portland's Standards require the applicant perform the Operations and Maintenance for project BMP's and maintain records as suggested herein.

The purpose of this document is to define, in detail, the inspection and maintenance requirements deemed necessary to assure that the stormwater management facilities function as intended when they were designed. Subsequent sections identify individual maintenance items, give a brief commentary of the function and need for the item, a description of the work required, and a suggested frequency of accomplishment. While the suggested programs and schedules must be adapted to specific projects, the material presented should provide guidance for a successful long-term program for operation and maintenance. Certain facilities, specifically the potential water quality volume storage or treatment measures such as infiltration, StormFilters®, Filterra®, and StormTreat® are not intended to be placed in service until the tributary catchment area has the permanent cover in place and any contributing turf areas have achieved a 90% catch of vegetation (i.e. established).

A. GUIDELINES OVERVIEW

A summary of the individual components of stormwater management facilities for this project has been prepared. The format used in the summary is as follows:

Preface: A general description of what function/benefit the element is intended to provide. This is a short summary and not intended to provide the design basis, which can be found in other sources.

Inspection: This section provides the inspection requirements for the individual component.

Maintenance: The section provides general information on the routine maintenance requirements of this element.

Frequency: This section outlines the best judgment of the designer on the system to the frequency of maintenance.

Comments: This section provides any particular comment on the site-specific features of this element. This is a summary only. The owner/operator should review the design drawings and documents carefully to understand the particular elements of the project. The end of this section should allow the owner/operator to make notes on the specific program. This may include the selected maintenance procedure, cross-references to applicable design drawings, etc.

A list of the individual inspection/maintenance elements is provided in the table of contents. The guidelines are proposed for initial use with adjustments made as appropriate based upon specific project experience.

This report includes the Operation and Maintenance requirements for any potential BMP identified in the Stormwater Management Report for this project. Many of these will not be required for the final stormwater management option selected for this project.

II. PROJECT OVERVIEW

Key permits issued (or applied for) on the project include:

- City of Portland Site Plan Approvals
- City of Portland Approval for Stormwater Management Plan

A copy of the permits and Stormwater Management Report should be appended to this manual as Attachment B. The Owner/Operator of the stormwater management system should review these permits for a general description and background of the project, as well as any specific permit conditions or requirements of the project.

The applicant has retained Fay, Spofford & Thorndike (FST) for civil engineering for the midtown project. FST has prepared the design for the stormwater management facilities and may be contacted at:

Fay, Spofford & Thorndike
778 Main Street, Suite 8
South Portland, Maine 04106
(207) 775-1121

It is recommended the preparer of the plan be contacted with any particular questions on the design intent or similar issues.

The applicable plans and design documents which apply to the project are:

1. Civil Site Plans Prepared by Fay, Spofford & Thorndike.
2. The Erosion Control/Sedimentation Control Plan for the project.
3. The Stormwater Management Plan for the project.

A copy of these documents should be retained with this manual.

The proposed design may include inlets, stormwater conveyance lines, vortex type pretreatment systems proprietary treatment units, wet ponds, outlet control structures, and backwater isolation valves.

The project is subject to the requirements of the City of Portland Code of Ordinances, Chapter 32. Specifically the post construction stormwater management plan. The City requirements have been reiterated for ease of reference; however, the owner shall be responsible to meet the current City code.

"Any person owning, operating or otherwise having control over a BMP required by a post construction stormwater management plan shall maintain the BMP's in accordance with the approved plan and shall demonstrate compliance with that plan as follows:

(a) Inspections. The owner of operator of a BMP shall hire a qualified post-construction stormwater inspector to at least annually, inspect the BMP's, including but not limited to any parking areas, catch basins, drainage swales, detention basins and ponds, pipes and related structures, in accordance with all municipal and state inspection, cleaning and maintenance requirements of the approved post-construction stormwater management plan.

(b) Maintenance and repair. If the BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator of the BMP shall take corrective action (s) to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide a record of the deficiency and corrective action (s) to the department of public services ("DPS") in the annual report.

(c) Annual report. The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, on or by June 30 of each year, provide a completed and signed certification to DPS in a form provided by DPS, certifying that the person has inspected the BMP (s) and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they require maintenance or repair, including the record of the deficiency and corrective action (s) taken.

(d) Filing fee. Any persons required to file an annual certification under this section shall include with the annual certification a filing fee established by DPS to pay the administrative and technical costs of review of the annual certification.

(e) *Right of entry. In order to determine compliance with this article and with the post-construction stormwater management plan, DPS may enter upon property at reasonable hours with the consent of the owner, occupant or agent to inspect the BMP's."*

III. STANDARD INSPECTION/MAINTENANCE DESCRIPTIONS

The following narratives describe the inspection/maintenance provisions for the Stormwater Management system. These O&M procedures will complement scheduled sweeping of the parking deck which are anticipated to occur at least twice per year. Proper O&M is necessary to make sure the system will provide its intended purpose of conveying runoff, removing a substantial amount of the suspended solids, and other contaminants in the stormwater runoff.

A. STORMWATER INLETS

Preface: The success of any stormwater facility relies on the ability to intercept stormwater runoff at the design locations. Stormwater inlets may include catch basins, open culverts, culverts with bar screens, roof scuppers, plaza scuppers, trench drains, and field inlets. Inlets exist throughout the system. The inlets contain oil sorbent booms to capture oil or petroleum/hydrocarbons and avoid discharge to downgradient areas. These will clog over time and require replacement. However, since most of the contributing surface area is rooftop or parking deck, the replacement is anticipated to be infrequent.

Inspection: The inspection of inlet points will need to be coordinated with other maintenance items, these include:

- Parking decks
- Building maintenance areas
- Grounds maintenance

The key elements of the inspection are to assure the inlet entry point is clear of debris and will allow the intended water entry.

Maintenance: The key maintenance is the removal of any blockage which restricts the entry of stormwater to the inlet. The removed material should be taken out of the area of the inlet and placed where it will not reenter the runoff collection system. Snow should be removed from inlets on parking decks or plaza areas. Grass clippings and leaves should be bagged and removed particularly near the yard inlets near the building.

Frequency: All inlets should be inspected on a quarterly basis, and after/during significant storm events. Inspection of the parcel including rooftops and upper level parking decks is required.

Maintenance/Inspection Responsibility:

Maintenance Personnel: The maintenance personnel will perform the normal maintenance/inspections of the inlets and tributary drainage system.

Comments: Maintenance of inlets is critical on this project.

POORLY STABILIZED INLET ALLOWS ENTRANCE OF DEBRIS AND REDUCED CAPACITY

STABILIZED INLETS REDUCE DEBRIS ACCUMULATION AND MAINTAIN DESIGN CAPACITY

B. SORBENT BOOMS

Preface: During construction, sorbent booms will be installed in the catch basins which have pavement areas. The intent of these is to absorb oil and runoff from new pavement surfaces. These will be removed and replaced when construction of the project is complete and should be inspected quarterly for the first year and annually thereafter.

Inspection: The sorbent boom should be raised out of the inlet, inspected, and replaced if necessary. Inspection should occur for the first year and annually thereafter concurrent with the catch basin cleaning.

Recommendation: It is recommended this project have additional sorbent booms or pillows onsite in the event of an unexpected spill or if oil sheen is observed frequently on any inlet.

Maintenance: The inspection and replacement should be conducted as part of a third party O&M contract and require disposal of used sorbent booms as "special wastes".

C. TRIBUTARY DRAINAGE SYSTEM

Preface: Stormwater from most of the project will be directed through a conveyance system which transports the flow to water quality storage units, the vortex based separators, or the City storm drain network. This conveyance system will be principally overland flow discharging to piped drain systems. Most of the sediment is carried by the drainage system is intended to be trapped near the inlets or in pretreatment devices. Maintenance of this system can play a major role in the long-term maintenance costs and the effectiveness of the pond system.

Inspection: The tributary drainage system should be periodically inspected to assure that it is operating as intended, and that its carrying capacity has not been diminished by accumulations of debris and sediment or other hydraulic impediments. On piped systems, the inlets must be inspected to ensure the rims are set at the proper elevation to optimize flow entry and are not clogged with debris. The inlet catch basins are normally equipped with sumps and hooded outlets which will remove gross floatables and large sediment particles from the flow stream.

The level of sediment in the sumps should be checked to assure their effectiveness. Pipelines connecting the inlets should be checked to determine if siltation is occurring. This will be most critical on drain lines laid at minimal slopes. This can usually be accomplished by a light and mirror procedure.

In some projects most of the stormwater is carried in open swales, channels, or ditches. These conveyance channels may be rip rapped or vegetated, depending on the gradient and expected flow velocities. These facilities must be inspected to insure debris or sedimentation does not reduce their carrying capacity. Excess vegetative growth must also be noted. The surface protection for the channels, either stone or vegetation, must be inspected to insure its integrity. Any areas subject to erosion should be noted.

Maintenance: Maintenance of the storm drainage system must assure that it continues to serve its design function on a long-term basis, and that its operation does not transport excessive sedimentation to any downstream detention pond, or the receiving waters. Elevations on the rim of catch basins should be adjusted as needed to assure optimal water entry. Depending on the frost susceptibility of the soil, the rims may become elevated over time causing flow to circumvent the inlet. If a filter bag has been designated for the inlet silt or other deleterious materials, can significantly reduce capacity and the bags should be removed with the sediment and replaced. Catch basin cleaning would normally be accomplished with vacuum trucks contracted as a maintenance service for the retail center. The removed material must be disposed of at an approved site for such materials.

If sediment in the pipeline is observed, it should be removed. This may be accomplished by hydraulic flushing, or by mechanical means. If hydraulic flushing is used the downstream conditions should be analyzed. The tidal influence can aggregate sedimentation since there are periods of no flow. Backwater valves and connection points are intended to reduce this occurrence.

Frequency: The piped drainage system should be inspected on an annual basis. Adjustment of inlet rim elevations should be on an as needed basis. Cleaning catch basin sumps and pipelines will depend on the rate of accumulation.

Maintenance/Inspection Responsibility:

Maintenance Personnel: The Federated Companies Maintenance Personnel.

Special Services: The owner may elect to contract with an independent agent for cleaning of replacement of sorbent booms, catch basins, sumps, and pipelines. Remedial source control measures may be performed by the owner or an outside service depending upon the nature of the particular situation.

Comments: Maintenance of inlets of utmost importance to the project to avoid unintended roof loading, ice accumulation, and cleanliness of the floors of the building.

A WELL STABILIZED VEGETATED SWALE SHOWS LITTLE SIGNS OF EROSIVE VELOCITIES OR FLOWS. THIS SWALE ALSO FUNCTIONS AS A POND SPILLWAY

D. SETTLING TANKS

Preface: In some cases, settling tanks are used ahead of the water quality storage or pretreatment. The units typically have at least a 2:1 length to width ratio and are designed based upon Stokes Law for settlement. The units also have a baffle to retain floatable materials. These units are typically buried with two or three manhole risers at finish grade or access and operate with a relatively deep water depth which is equal to the outlet elevation. The inlet is typically about 3 inches higher. These operate similar to a wet pond sediment sump or a swirl concentrator to capture and reduce the suspended solids before flowing to the storage portion of the management system.

Inspection: A probe or a “sludge judge” can be used to check the depth or sediment in the tank. Typically, the accumulation is highest near the inlet and lowest on the distal end of the tank. If this is not what is observed, it may be necessary to install a tee and vertical drop from the inlet and perhaps some baffles to promote enhanced settlement.

Maintenance: Removal of discernible sediment is recommended. The floatables should be vacuumed from the surface, the clearer water decanted and pumped, and the sediment pumped with a vacuum truck. Dispose of sediment in accordance with local, State, and Federal statutes.

Frequency: Twice per year, unless experience shows little accumulation in which case the frequency can be decreased.

Maintenance Responsibility: The Federated Companies, their assigns, or subcontracted services for SWPP Plan compliance.

E. WATER QUALITY UNITS USING VORTEX BASED DEVICES

Preface: Certain vendors provide pre-manufactured systems which are effective in removal of suspended sediment particularly sand used for winter maintenance. Most units operate on a vortex principal with the sediment being swept from the stormwater stream and stored in the base of the unit. The units are constructed of durable materials requiring little maintenance of the physical component and typically are accessible via an at grade manhole cover.

The vendor of the unit should provide information on suggested maintenance which should be appended to this manual. In certain cases, the vendor will execute an inspection and maintenance agreement for the initial years of operation.

These units typically do not remove nutrients, metals, and dissolved materials.

Inspection: Most water quality units have an access manhole cover for inspection. The sediment storage zone is the bottom of the system and lies below the vortex. Because of the depth, a pole staff, or sludge judge is helpful in determining the depth of the sediment. Inspection should comply with applicable confined space regulations and vendor recommendations.

Maintenance: The typical unit maintenance is the removal of sediment. DeLuca Hoffman Associates, Inc. typically recommends the units be inspected in the spring and late fall with adjustments based on historic operating experience.

The vendor may have specific scheduled maintenance schedules which should be followed.

The structural components of the system are principally stainless steel, concrete, and or climate resistant plastics.

Frequency: Twice per year or as outlined above.

Applicability: Vortex based units are among the devices that may or may not be employed in the final design.

Special Notes: These units are designed for a specific flow and catchment area. If the contributing watershed is increased, the need for design modifications or supplements to the water quality units should be examined.

MAXIMUN IMPERVIOUS TRIBUTARY AREA (ACRES)				
MODEL NUMBER	80% TSS REMOVAL	70% TSS REMOVAL	60% TSS REMOVAL	50% TSS RENOVAL
STC 2400	1.65	2.00	2.50	3.35
STC 3600	2.60	3.15	3.95	5.30
STC 4800	3.60	4.30	5.40	7.25
STC 6000	4.60	5.55	6.95	9.25
STC 7200	5.55	6.70	8.40	11.25

STORMCEPTOR IS PROTECTED BY
ONE OR MORE OF THE FOLLOWING
PATENTS:
Canadian Patent No. 2,009,208
Canadian Patent No. 2,137,942
U.S. Patent No. 4,985,148
U.S. Patent No. 5,498,331
U.S. Patent No. 5,725,760
U.S. Patent No. 5,753,115

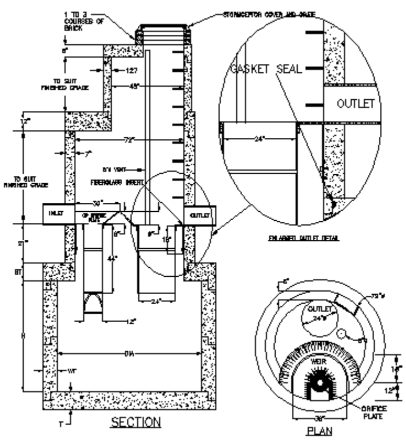
Notes :

1. Dimensions may vary regionally due to different manufacturer's.
2. Access way is offset to allow access to the fibreglass bypass slab and to allow inspection and maintenance from the surface.
3. Pipe installation by grouting or flexible boots.
4. Flexible boots may not be suitable for all installations. Please contact your sales representative for further information.
5. 24" outlet to be used for cleanout access to the treatment chamber.
6. Safety grates for the 24" outlet are available.

MODEL NUMBER	STORAGE CAPACITY	ST	H	T	WT	OP	DIA
STC 2400	2400 U.S. GALLONS	13"	60"	10"	9"	8"	96"
STC 3600	3600 U.S. GALLONS	13"	100"	10"	9"	8"	96"
STC 4800	4800 U.S. GALLONS	17"	90"	12"	10"	10"	120"
STC 6000	6000 U.S. GALLONS	17"	112"	12"	10"	10"	120"
STC 7200	7200 U.S. GALLONS	17"	96"	12"	12"	12"	144"

PRECAST CONCRETE STORMCEPTOR DETAIL - LARGE UNIT

N.T.S.



These units are employed for this project for pretreatment and in lieu of a sediment forebay ahead of the pocket (wet) pond.

F. <u>DEWATERING WATER QUALITY STORAGE TANK OR WET PONDS</u>

Preface: Dewatering water quality storage tanks or wet ponds periodically is desirable in order to check sediment accumulations, side slope conditions and debris accumulation. Typically, dewatering will not be required for water quality storage areas if the outlet control structure is functioning properly. However, wet ponds (if used) will require dewatering.

Dewatering should be done under dry conditions.

Inspection: The purpose of dewatering is to allow observation of sediment buildup and the accumulation of debris. Pump suction should be kept above the sediment level to minimize silt transfer. Filter fabric over the suction or a stone sump may be required to prevent excessive silt from being discharged. The pumping rate should be designed by a professional engineer if over 50 gallons per minute.

Upon draining the tank or pond, the sediment level should be measured at multiple locations to determine a representative depth.

Maintenance: If the volume of sediment recorded exceeds 5% of the normal operating volume designated for water quality storage or 15% of the volume of a wet pond, the sediment should be removed. Prior to removal, the material should be sampled and analyzed in accordance with current practice as promulgated by appropriate regulatory agencies. Upon documentation of its chemical characteristics, the material should be removed by appropriate means for trucking from the site. Disposal of removed material must be in compliance with all regulatory requirements which will vary with the documented characteristics with material. Guidance should be sought from appropriate regulatory agencies.

Frequency: Draining and inspection should be made after the first three years of operation. The rate of recorded sediment buildup will then be utilized to schedule subsequent drainings. Sediment removal will be accomplished when the sediment occupies 5% of the normal water quality storage volume or 15% of the normal wet pond operating volume. Sediment removal once every 15 to 20 years may be expected in most instances. Upon completion of sediment removal, a survey should be accomplished to document pond shape and elevation or depths of storage capacity.

POND HAS BEEN DRAINED TO ALLOW REMOVAL OF SEDIMENTS ACCUMULATED DURING CONSTRUCTION

Comments: If a wet pond is used, it would have a Linear Low-Density Polyethylene Liner. If the pond is excavated to remove sediment, the liner may be damaged. It is recommended the liner specialists be consulted prior to excavation for repair solutions and monitoring.

RECENTLY CONSTRUCTED WET POND

Note: Permanent pool elevation is maintained to allow settlement of suspended solids.

G. CONTROL STRUCTURES

Preface: If water quality measures do not meet the Site Location of Development Permit standards, outlet control structures will be required. These structures regulate the slow discharge of the water quality volume to meet MeDEP Chapter 500 Standards. Flow is anticipated to be released during and every storm event over about 0.10 inches.

The control structure will be designed to be inspected by removing the manhole covers and inspection of the orifices, weir, and channels. Debris should be removed whenever observed and reported to key maintenance personnel since any debris would indicate lack of proper system O&M in the collection and conveyance system. Entry may require CONFINED SPACE ENTRY procedures and appropriately trained personnel.

Inspection: The outlet control structures must be inspected to assure it maintains its intended hydraulic characteristics. The inspection would note any debris or sediment which may accumulate in the structure and in the inlet and outlet pipes. It is noted that it does not take much debris or silt to alter the hydraulic characteristics of the discharge. The inlet should be inspected to assure it is not blocked or restricted or there is sediment to the extent that its flow characteristics may be altered.

Maintenance: Maintenance of the control structure will consist primarily of removing debris which may accumulate and sealing the bulkhead if leakage occurs.

Frequency: The control structure should be inspected quarterly, and after a rainfall event (in excess of 1½ inches in a 24-hour period).

Maintenance/Inspection Responsibility:

Inspection Personnel: The Maintenance Personnel of The Federated Companies will perform the scheduled maintenance/inspection.

Dates of inspections, maintenance performed, and any observed problems should be noted in the logs/records maintained by The Federated Companies

Outside Contract Services: The outlet structure should be opened/inspected by the Maintenance Personnel of The Federated Companies on a quarterly basis. The logs and records of inspections and maintenance of the control structures should also be reviewed by the contract agent if The Federated Companies elects to retain an outside agent for assistance in operation and maintenance of the system.

Replacement Parts/Repairs: No normal replacement parts are repaired. Inspection personnel should have a bucket to remove debris from the structure. If leakage of the bulkhead occurs, it is recommended that repairs be made by a professional contractor familiar with hydraulic grouts. If clogging of small orifices occur, it may be necessary to add a protective vertical grate to reduce the frequency of clogging. However, water is generally filtered before the release through very small outlet orifices (StormFilters® or under drains).

VEGETATION PROVIDES WATER QUALITY TREATMENT AND AESTHETIC ENHANCEMENT OF THE POND

H. IN-LINE STORAGE

Preface: In-line storage may be used for strict detention, storage of water ahead of infiltration systems, for buried under drained filters or proprietary treatment system. Because of the difficulty in access for inspection and maintenance, the units will be preceded with pretreatment to remove sediment.

The underground storage options for this project include buried Brentwood Storm Tanks or buried reinforced Portland Cement Concrete tanks or water quality treatment ahead of water quality treatment units.

In-line storage systems typically have a restrictive outlet when used for detention. This outlet is a separate downstream appurtenance with orifices, weirs, and overflows. The stone storage above the exfiltration surfaces do not have hydraulic restrictions and the disbursement of flow is actually preferred.

Specific design cautions should be considered if in line storage is used as part of a stormwater management system. In-line storage systems have multiple inspection ports. The locations should consider the need for confined space entry.

Inspection*:* Inspection of in-line storage systems should follow all protocols for confined space entry. Inspections should include:

- Observations of standing water and monitoring drainage to make sure drainage is achieved 48 hours after a rainfall of 1 inches or greater (annually).
- Sedimentation
- Outlet Controls
- Inlets
- Inspection of each isolated tank series, run of pipe, distribution of manhole, and header pipe

Subsurface Detention Options

THE BRENTWOOD STORMTANK

97% Void Space

Several Heights available (12"-36")

Can be stacked

Contractor Assembled

Small Inspection Ports

Pretreatment required

2' cover min

Stone base and geogrid

Maintenance*:* Maintenance of in-line storage systems will vary depending upon the extent of pretreatment, the nature of the receiving bodies, and the design. Leakage, accumulated sediment, and repairs of any damaged portion of the system should be performed immediately upon discovery.

Maintaining Responsibility: The Federated Companies, their assigns, or subcontracted services for SWPP Plan compliance.

Frequency*:* After successful operation of the in-line storage system for one year or two major storms (whichever is longer), quarterly inspections are recommended **except the**

drawdown test after a one-inch rain may be annually only. Maintenance repairs should be performed as soon as possible.

Applicability: Underground detention will be employed on this project for recharge and to reduce discharge rates.

I. STORMTREAT™ UNITS

During the first year, the basin should be inspected semi-annually and following major storm events. Recommended maintenance procedures for the first year are as follows:

- Watering may be necessary to aid plant establishment if rainfall intervals are longer than one week;
- Debris and weeds shall be removed from the bio-filter area as needed;
- Tank lids should be removed and sediment depth checked and recorded;
- Maintenance schedule should be designed based on the sediment loading of the first maintenance visits;
- Sediment should be removed at or before reaching a depth of 5 inches;
- Outflow rate should be checked and reset if necessary; (recommend 2 gpm per tank)
- Perimeter plants should be trimmed or harvested periodically to a minimum height of 6 inches.

The operation and maintenance of the StormTreat™ System, after the first year, is limited to semi-annual inspections and solids removal on an as-needed basis.

The annual inspections should include the following steps:

1. Check the discharge flow rate: The outlet is designed to discharge at a rate of 2.0 gallons/minute per tank. This provides for a retention time of approximately three days for the full tank to empty following a runoff event. The discharge rate can be checked by directly measuring a timed-discharge volume if the outlet is "daylighted" or through "falling-level" measurements inside the central sedimentation chambers (the total static volume of each tank is 1,390 gallons and the height of the tank is 4 feet, therefore a 2.0 gallons/minute discharge rate can be observed as the water level in the tank falling at a rate of one inch per hour). If the falling level test is used, the inlet pipe must be temporarily plugged to avoid filling the underground storage chambers.

2. Change the inlet grit filter inside the sedimentation chamber.

3. Measure sediment depth inside the sedimentation chamber and schedule a pump-out if depth reaches 6 inches in depth. A future pump-out date can be estimated by projecting based upon sediment accumulation rates since the last measurement or since original installation. On average, StormTreat™ Systems need to have sediment removed once every three years. This can be done using a standard septic system suction pumper or with a vacuum-pumping unit.

4. Observe wetland plant conditions and height (during growing season). Wetland plants may need to be supplemented during the first three growing seasons depending upon local site conditions.

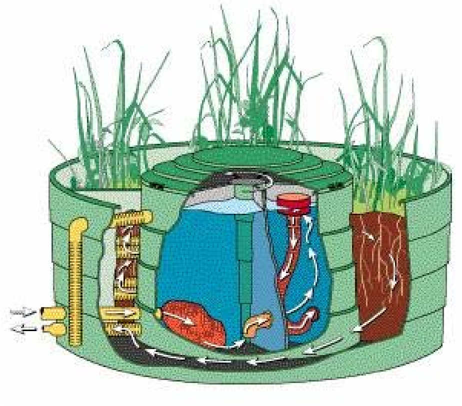
5. Perform (maintenance of) pretreatment devices as required in this manual.

The Federated Companies, their assigns, or subcontracted services for SWPP Plan compliance.

Frequency: Semi-annually or as outlined above.

Applicability: StormTreat™ units are proposed for this project.

Special Note: 1.) These units are designed for a specific flow and catchment area. If the contributing watershed is increased, the need for design modifications or additional StormTreat™ units should be examined. 2.) Fertilization of the planting on the structure must be avoided.



J. FILTERRA® UNITS

Preface: The Filterra units consist of a concrete container with an underdrain at the base, proprietary filtration media, a top layer of mulch and plants specifically selected for nutrient transformation and uptake. Access is provided through a surficial tree grate. Water enters through a curb inlet and discharges through the underdrain at the base of the tank. The Filterra tree box type soil filter is installed upstream of a StormTech Isolator Row to filter pollutants from runoff.

Inspection: Inspection of the Filterra unit should include review of the health and condition of the plant material, the surficial mulch for degradation and accumulation of debris and litter, and the curb inlet for clogging and debris. The access manholes and inspection ports on the Isolator Row should be inspected for evidence of clogging and sediment build-up.

Maintenance: Prune plant material during the spring and fall and replace top layer of mulch annually. The first year's maintenance on the Filterra unit shall be provided by the Manufacturer to ensure the systems are operating as intended. Ongoing inspection and maintenance shall be performed by a professional with knowledge of erosion and stormwater control, including a working knowledge of the Filterra and StormTech products.

Frequency: Inspect quarterly and at any time when sustained ponding is observed near the inlet.

Maintenance/Inspection Responsibility:

Maintenance Personnel: midtown project

Comments: Maintenance of units are critical on this project to prevent short term clogging and replacement.

Applicability: There is one Filterra unit for the project.

K. STORMFILTER® UNITS

Preface: The CONTECH StormFilter® is a water quality treatment device which relies on a proprietary filter cartridge to remove pollutants. The filter must be inspected and maintained annually to prevent sediment accumulation from blocking the flow through the device.

Inspection: At least one scheduled inspection activity should take place per year with maintenance following as warranted.

First, inspection should be done before the winter season. During which, the need for maintenance should be determined and, if disposal during maintenance will be required, samples of the accumulated sediments and media should be obtained.

Second, if warranted, maintenance should be performed during periods of dry weather.

In addition, you should check the condition of the StormFilter® unit after major storms for potential damage caused by high flows and for high sediment accumulation. It may be necessary to adjust the inspection/maintenance activity schedule depending on the actual operating conditions encountered by the system.

Generally, inspection activities can be conducted at any time, and maintenance should occur when flows into the system are unlikely.

It is desirable to inspect during a storm to observe the relative flow through the filter cartridges. If the submerged cartridges are severely plugged, then typically large amounts of sediments will be present and very little flow will be discharged from the drainage pipes. If this is the case, then maintenance is warranted and the cartridges need to be replaced.

Warning: In the case of a spill, the worker should abort inspection activities until the proper guidance is obtained. Notify the local hazard control agency and CONTECH immediately.

To conduct an inspection:

1. If applicable, set up safety equipment to protect and notify surrounding vehicle and pedestrian traffic.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the access portals to the vault and allow the system vent.
4. Without entering the vault, visually inspect the inside of the unit, and note accumulations of liquids and solids.

5. Be sure to record the level of sediment build-up on the floor of the vault, in the forebay, and on top of the cartridges. If flow is occurring, note the flow of water per drainage pipe. Record all observations. Digital pictures are valuable for historical documentation.
6. Close and fasten the access portals.
7. Remove safety equipment.
8. If appropriate, make notes about the local drainage area relative to ongoing construction, erosion problems, or high loading of other materials to the system.
9. Discuss conditions that suggest maintenance and make decision as to whether or not maintenance is needed.

Maintenance: The need for maintenance is typically based on results of the inspection. Use the following as a general guide. (Other factors, such as regulatory requirements, may need to be considered).

1. Sediment loading on the vault floor. If >4" of accumulated sediment, then go to maintenance.
2. Sediment loading on top of the cartridge. If > 1/4" of accumulation, then go to maintenance.
3. Submerged cartridges. If >4" of static water in the cartridge bay for more than 24 hrs after end of rain event, then go to maintenance.
4. Plugged media. If pore space between media granules is absent, then go to maintenance.
5. Bypass condition. If inspection is conducted during an average rain fall event and StormFilter® remains in bypass condition (water over the internal outlet baffle wall or submerged cartridges), then go to maintenance.
6. Hazardous material release. If hazardous material release (automotive fluids or other) is reported, then go to maintenance.
7. Pronounced scum line. If pronounced scum line (say ≥ 1/4" thick) is present above top cap, then go to maintenance.
8. Calendar lifecycle. If system has not been maintained for 3 years, then go to maintenance.

   Assumptions:

   - No rainfall for 24 hours or more.
   - No upstream detention (at least not draining into StormFilter®).
   - Structure is online. Outlet pipe is clear of obstruction. Construction bypass is plugged.

Depending on the configuration of the particular system, workers will be required to enter the vault to perform the maintenance.

Important: If vault entry is required, OSHA rules for confined space entry must be followed.

Filter cartridge replacement should occur during dry weather. It may be necessary to plug the filter inlet pipe if base flow is occurring.

Replacement cartridges can be delivered to the site or customers' facility. Contact CONTECH for more information.

<u>Warning:</u> In the case of a spill, the worker should abort maintenance activities until the proper guidance is obtained. Notify the local hazard control agency and CONTECH immediately.

To conduct cartridge replacement and sediment removal:

1. If applicable, set up safety equipment to protect workers and pedestrians from site hazards.
2. Visually inspect the external conditions of the unit and take notes concerning defects/problems.
3. Open the doors (access portals) to the vault and allow the system to vent.
4. Without entering the vault, give the inside of the unit, including components, a general condition inspection.
5. Make notes about the external and internal condition of the vault. Give particular attention to recording the level of sediment build-up on the floor of the vault, in the forebay, and on top of the internal components.
6. Using appropriate equipment offload the replacement cartridges (up to 150 lbs each) and set aside.
7. Remove used cartridges from the vault using of the following methods:

   <u>Method 1:</u>

   A. This activity will require that workers enter the vault to remove the cartridges from the under drain manifold and place them underdrain manifold and place them under the vault opening for lifting (removal). Unscrew (counterclockwise rotations) each filter cartridge from the underdrain connector. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.

      Using appropriate hoisting equipment, attach a cable from the boom, crane, or tripod to the loose cartridge. Contact CONTECH for suggested attachment devices.

      <u>Important:</u> Cartridges contain leaf media (CSF) do not require unscrewing from their connectors. Do not damage the manifold connectors. They should remain installed in the manifold and can be capped during the maintenance activity to prevent sediments from entering the underdrain manifold.

   B. Removed the used cartridges (up to 250 lbs) from the vault.

      <u>Important</u>: Avoid damaging the cartridges during removal and installation.

   C. Set the used cartridge aside or load onto the hauling truck.

   D. Continue Steps A through C until all cartridges have been removed.

Method 2:

A. Enter the vault using appropriate confined space protocols.

B. Unscrew the cartridge cap.

C. Remove the cartridge hood screws (3) hood and float.

D. At location under structure access, tip the cartridge on its side.

   Important: Note that cartridges containing media other than the leaf media require unscrewing from their threaded connectors. Take care not to damage the manifold connectors. This connector should remain installed in the manifold and capped if necessary.

E. Empty the cartridge onto the vault floor. Reassemble the empty cartridge.

F. Set the empty, used cartridge aside or load onto the hauling truck.

G. Continue steps A through E until all cartridges have been removed.

8. Remove accumulated sediment from the floor of the vault and from the forebay. Use vacuum truck for highest effectiveness.

9. Once the sediments are removed, assess the condition of the vault and the connectors. The connectors are short sections of 2-inch schedule 40 PVC, or threaded schedule 80 PVC that should protrude about 1” above the floor of the vault. Lightly wash down the vault interior.

   a. If desired, apply a light coating of FDA approved silicon lube to the outside of the exposed portion of the connectors. This ensures a watertight connection between the cartridge and the drainage pipe.
   b. Replace any damaged connectors.

10. Using a vacuum truck boom, crane, or tripod, lower and install the new cartridges. Take care not to damage connections.

11. Close and fasten the door.

12. Remove safety equipment.

13. Finally, dispose of the accumulated materials in accordance with applicable regulations. Make arrangements to return the used empty cartridges to CONTECH.

Material Disposal: The accumulated sediment must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals. Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads.

Sediments and water must be disposed of in accordance with applicable waste disposal regulations. Coordinate disposal of solids and liquids as part of your maintenance procedure. Contact the local public works department to inquire how they dispose of their street waste residuals.

L. BACKWATER VALVES

Preface: The purpose of the backwater valves is to avoid unnecessary periods of slow velocities in the drainage pipelines, protect water quality storage systems, and certain proprietary devices including planted systems that function better without substantial saltwater mixing.

Inspection: The backwater valve can be inspected during periods without rainfall and rising tides. Manholes both upstream and downstream of the backwater valves can be inspected to determine if there is backwater caused by rising tides. A measurement of water depth or depth to water can be taken near the beginning of the rising tide cycle and a couple hours later and in advance of high tide. Increased water depths would indicate the valve may not be functioning properly.

Maintenance: If the backwater valve is not functioning as intended, maintenance will be required. This could include removing debris that prohibits the valve from seating or damage to the hinge mechanism. The project submittal drawings for the backwater valves should be attached to this manual and reviewed to see if any special maintenance is required by the manufacturer of the valve.

Frequency: Annually.

M. PARKING DECK

To protect the stormwater system, the parking decks should be swept at mid winter and spring and power washing with an appropriate vacuum/power wash vehicle once a year.

Maintenance: It is recommended this service be contract with the firm that maintains the other stormwater management facilities.

M. LITTER

Litter should be removed as a matter of course by workers and a part of the grounds maintenance contract.

N. STORMWATER PUMPS

Preface: Storm water pumps are considered an option for pumping the water quality volume and potentially for dewatering of pits and below grade tanks. These pumps may be permanent (sumps or designated water quality pumps) or temporary and used for occasional drawdown of storm water tanks.

If the pumps are permanent, it is recommended:

- The pumps have slide rails for removal if the water depth is over 3 feet;
- The control panels record events and elapsed time; and
- If the pumps are for protection of building related mechanical systems, provisions be afforded for a connection to an emergency generator.

The project shop drawings and submittals will include information on the operation and maintenance for the pump.

Inspection: Any alarm events and quarterly inspection including recording the total running hours and events from the control panel warrant an inspection. If the run time, events, or alarm condition warrant, the pump should be removed and inspected. Also, refer to the pump manufacturers O&M manual.

Frequency: See inspection recommendations.

Maintenance Responsibility: The Federated Company, their assigns, or subcontracted services for SWPP Plan compliance.

O. SUMMARY CHECKLIST

The above described inspection and maintenance items have been summarized on a checklist attached hereto as Attachment C.

IV. PROGRAM ADMINISTRATION

A. GENERAL

A reliable administrative structure must be established to assure implementation of the maintenance programs described in the foregoing section. Key factors that must be considered in establishing a responsive administrative structure include:

1. Administrative body must be responsible for long-term operation and maintenance of the facilities.

2. Administrative body must have the financial resources to accomplish the inspection and maintenance program over the life of the facility.

3. The administrative body must have a responsible administrator to manage the inspection and maintenance programs.

4. The administrative body must have the staff to accomplish the inspection and maintenance programs, or must have authority to contract for the required services.

5. The administrative body must have a management information system sufficient to file, retain, and retrieve all inspection and maintenance records associated with the inspection and maintenance programs.

6. ***A qualified post construction inspector shall be retained by the Owner. His duties shall include preparing schedules for the Owner's maintenance, summarizing the results of this maintenance and preparing an annual report on the operation, maintenance, and repair of the stormwater system which must be copied to the City. (The Owner shall be responsible for retaining a separate entity to perform maintenance which cannot be performed by the management of building and property grounds.) This person shall also participate in troubleshooting of the stormwater management system if a problem develops.***

If any of the above criteria cannot be met by the entity assigned inspection and maintenance responsibilities, it is likely that the system will fail to meet its water quality objectives at some point during its life. While each of the above criteria may be met by a variety of formats, it is critical to clearly establish the assigned administrative body in a responsible and sustainable manner.

B. RECORD KEEPING

Records of all inspections and maintenance work accomplished must be kept and maintained to document facility operations. These records should be filed and retained for a minimum 5-year time span. The filing system should be capable of ready retrieval of data for periodic reviews by appropriate regulatory bodies. Where possible, copies of such records should also be filed with the designated primary regulatory agency for their review for compliance with permit conditions. Typical inspection and maintenance record forms are attached hereto as Attachment B.

C. CONTRACT SERVICES

In some instances or at specific times, the Maintenance Personnel may not have the staff to conduct the required inspection and/or maintenance programs as outlined in this document. In such cases, the work should be accomplished on a contractual basis with a firm or organization that has the staff and equipment to accomplish the required work.

The service contract for inspection and maintenance should be formal, well written legal document which clearly defines the services to be provided, the contractual conditions that will apply, and detailed payment schedules. Liability insurance should be required in all contracts.

REVISED TEXT TO OPERATION & MAINTENANCE MANAUL (ATTACHED TO RESPONSE TO WOODARD & CURRAN'S COMMENTS)

NOTE: THE REVISED TEXT ABOVE IS PROVIDED IN BOLD FACE AND ITALIZED TEXT

ATTACHMENT A

Sample Inspection Logs

midtown
PORTLAND, MAINE

STORMWATER MANAGEMENT
WATER QUALITY STORAGE OR WET POND
ANNUAL INSPECTION & MAINTENANCE LOG

FACILITY:		**YEAR:**	
LOCATION:		**CONTRACTOR:**	
FUNCTION:		**INSPECTOR:**	
DATE OF INSPECTION:			
ITEM IDENTIFICATION	**DESCRIPTION OF CONDITIONS**	**MAINTENANCE ACCOMPLISHED**	**DATE OF MAINTENANCE**
GENERAL COMMENTS:			

SAMPLE

midtown

PORTLAND, MAINE

STORMWATER MANAGEMENT
STORAGE AREA
MONTHLY INSPECTION & MAINTENANCE LOG

FACILITY:	YEAR:
LOCATION:	CONTRACTOR:
FUNCTION:	

MONTH	DAY	INSPECTOR	WATER DEPTH	OVERFLOW WEIR		WEIR CONDITION
				CLEAR	DEBRIS	
JANUARY						
FEBRUARY						
MARCH						
APRIL						
MAY						
JUNE						
JULY						
AUGUST						
SEPTEMBER						
OCTOBER						
NOVEMBER						
DECEMBER						

LIST SPECIAL MAINTENANCE UNDERTAKEN:

midtown
PORTLAND, MAINE

STORMWATER MANAGEMENT
STORAGE
SEMI-ANNUAL INSPECTION & MAINTENANCE LOG

SEMI-ANNUAL INSPECT 1.2	FACILITY:
DATE:	LOCATION:
INSPECTOR:	FUNCTION:
WEIR CONDITION:	
OUTLET CONDITION	

FORE BAY SUMP	EST. DEPTH SED.	REMOVED? Y/N	EST. VOL. CY	WHERE DISPOSED OF	STRUCTURAL CONDITION

CONTROL STRUCTURE:
DESCRIBE CONDITIONS FOUND & MAINTENANCE ACCOMPLISHED:

ATTACHMENT B

Permits for Project

(To be Added at a Subsequent Time)

ATTACHMENT C

Summary Checklist
Inspection and Maintenance

Stormwater Management System
Maintenance Program
Summary Checklist

Item	Commentary	Frequency				
		Monthly	Quarterly	Semi-Annual	Annual	Long Term
Stormwater Inlets	Stormwater inlets allow flow entry from a surface swale to a piped system. Entry may or may not be equipped with a bar rack. Inspect entry for debris accumulation. Remove debris to allow unimpeded entry. Lawn clippings and leaves should be removed from yard areas.		X		X Clearing	
Sorbent Booms	Sorbent boom should be raised out of the inlet, inspected, and replaced if necessary.		X For 1st 12 months		X After 1st year	
Tributary Drainage System	Inspect to assure that the carrying capacity has not been diminished by debris, sediment or other hydraulic impediments.				X	
Settling Tanks	Remove discernible sediment.			X		
Water Quality Units using Vortex Based Devices	Solids removal on an as-needed basis.				X	
Dewatering Water Quality Storage Tank or Wet Ponds	Biofilter should be inspected when normal landscape maintenance is performed. Remove and replace dead vegetation. Remove sediment when it occupies 15% of volume; For wet ponds – 5% for water quality	X		X		X 10-15 yrs
Control Structures	Inspect outlet control to assure it maintains its hydraulic characteristics. Inspect inlets for blockage.		X			
In-Line Storage (Underground detention)	Inspect for standing water, sedimentation, outlet control, inlets.					
StormTreat™ Units	Check units for debris			X After 1st year	X For 1st year	
Filterra® Units	Inspect quarterly and at any time when sustained ponding is observed near the inlet. Inspect landscaping and replace mulch.		X		X	
StormFilter® Units	First inspection before winter season Second inspection, if warranted, during periods of dry weather. Check units after major storm events				X	
Backwater Valves						
Parking Deck	Parking decks should be swept at mid winter and spring. Power washing with an appropriate vacuum/power wash vehicle be done once a year.			X	X	
Litter	Litter should be removed daily.					
Stormwater Pumps		X				

ATTACHMENT D

Pump Maintenance History

PUMP MAINTENANCE HISTORY

PUMP NO.____

LOCATION:____

EVENT NO.____

DATE	TOTAL RUNNING HOURS	RUNNING HOURS THIS PERIOD	EQUIVALENT ARRIVAL RATE	EVENTS	EVENTS THIS PERIOD	EQUIVALENT ANNUAL NO.	MAINTENANCE PERFORMED	PART(S) USED	SYMBOL NUMBER(S)

**PUMP MANUAL TO BE APPENDED (IF APPLICABLE)
SHOULD RECOMMEND TO ADD UPON RECEIPT FROM
CONTRACTOR DURING SUBMITTAL REVIEWS AND
PRIOR TO OCCUPANCY OF THE BUILDING**

EXHIBIT 14

EROSION & SEDIMENT CONTROL PLAN

EROSION AND SEDIMENTATION CONTROL REPORT

midtown
PORTLAND, MAINE

PREPARED FOR:

THE FEDERATED COMPANIES
3301 NE 1ST AVENUE, SUITE M-302
MIAMI, FLORIDA 33137

PREPARED BY:

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(207) 775-1121

STEPHEN R.
BUSHEY
NO. 7[illegible]
11-14-14

NOVEMBER 2014

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ATTACHMENTS

1.0 INTRODUCTION

Fay, Spofford & Thorndike has been retained by The Federated Companies to prepare an Erosion and Sedimentation Control Plan employing BMP's customarily used in Maine and which are applicable to this project. The site was environmentally contaminated and has undergone partial remediation. The residual cleanup is anticipated to be completed before commencing construction on this project. Detailed information on the environmental contamination, the established level of cleanup and remediation, and test results are available at the City of Portland Planning Department. However, the groundwater is potentially contaminated and will require treatment using containerized systems. An outline of the performance standard for the treatment system is provided as Attachment F. The final standards will be established by environmental agencies through the City's selected environmental consultant. The contractor shall be responsible for obtaining and reviewing the final standards from the City of Portland. The Contractor will also need to coordinate work with the qualified environmental professionals working for the City or Federated. The Erosion and Sedimentation Control Plan consists of this report, the appended materials, and the erosion control plans and detail sheets of the drawing set. The erosion controls are the minimum required for each phase of the project and require monitoring during construction to assess their effectiveness for the specific weather conditions occurring during the construction periods. This project is tributary to a separated sewer system meaning that turbid discharges would flow almost immediately to Back Cove. This plan includes rigorous measures and sets a standard to avoid significant discharges of turbid stormwater or environmentally tainted groundwater.

The storm drains in the area include a system that serves the easterly end of the project area which was constructed in about 2003 as part of a sewer separation project. This drainage system ultimately discharges to Back Cove on the northerly side of I-295 near the Franklin Arterial Interchange. This new system starts at a manhole at the intersection of Marginal Way and Franklin Arterial on the existing 72-inch diameter storm drain downstream of the tide gate and combined sewer overflow structure for the Franklin Street Pumping Station. The 72-inch storm drain has an invert of about -4.43 at this location. The new system included approximately 556 feet of 30 to 42 inch storm drain between Marginal Way and Somerset Street with inverts ranging from approximately -1.5 to 2.1 The drain continues in a westerly direction along Somerset Street and is approximately 1,013 feet in length with 18 to 30 inch storm drain along Somerset Street to the end of the drainage system. This catchment area limit is located about 40 feet westerly of the intersection of Somerset and Chestnut Street. A branch line feeding the so called "A" system was constructed along the pedestrian trail which runs along the northerly side of this project. This branch includes piping up to 18 inches in diameter and drains portions of the rear of the subject parcel and along the trail behind the project site.

A second drainage system serves the westerly portion of the project site. Drainage from Somerset Street flows to Elm Street and then continues northerly to Preble Street to a 60-inch diameter line that crosses under Interstate 295 and discharges to Back Cove.

Finally, there is a small catchment that enters the Chestnut Street system identified as System "C".

The construction will result in the majority of the site cover being rooftops or parking decks. There will be very little residual area and these small areas will consist of connecting walkways, hardscape, and landscaping or turf. Somerset and Chestnut Streets will be raised either as part of this project or a separate City Project. Coordination and planning the project to avoid disruption of the lightweight concrete fill to be placed and placement of ballast will be key elements of construction sequencing.

It is anticipated the construction will involve periods where pedestrian and bicycle traffic are detoured around portions of the work site, parking restrictions that do not currently exist will be made, and the use of a limited area of street pavements for storage of equipment trailers, containerized treatment systems, cranes, other construction equipment, and material stockpiles will occur at some periods during construction. These elements are discussed in more detail in the construction plan for the project, which is a separate document.

The erosion and sedimentation controls are quantified as follows:

- There shall not be any turbid release of storm runoff from the site.
- There shall be no tracking of mud onto the streets. Tracking is defined to be any visible and discernible soil, dirt, or deleterious debris on the street at the intersection of Pearl and Somerset to the east and Elm and Somerset to the west.
- There shall be no release of contaminated ground water from the site. The standard is defined in Attachment F.

Because there is a quantifiable standard, it will be the obligation of the contractor to monitor and meet the standards and the contractor may have options in selecting and locating erosion and sedimentation control devices provided the standards are met.

2.0 OVERVIEW OF SOIL EROSION AND SEDIMENTATION CONCERNS

The susceptibility of soils to erosion is indicated on a relative “K” scale of values over a range of 0.02 to 0.69. The “K” value is frequently used with the universal soil loss equation. The higher values are indicative of the more erodible soils. The relative K values of the underlying material (Au Gres) the site would be as follows:

Soil Symbol	Soil Description	“K” Value
Ag	Au Gres	0.15

The soils will be slightly to moderately susceptible to erosion. The site grades are currently flat and featureless which aids in reducing the erosion potential.

The primary emphasis of the erosion and sedimentation control plan to be implemented for this project is as follows:

- **Temporary Measures:** Planning the project to have erosion resistant measures in place by implementing measures intended to prevent erosion from occurring.
- **Phasing Sequencing:** The plan includes measures to intercept and convey runoff to temporary control devices as the construction of the project occurs. The use of small collection sumps with a clean sand filter above an underdrained discharge is recommended to supplement the principal sumps to help reduce turbidity. Turbidity should be controlled in any discharge through the use of settling, filters, or chemical coagulants.
- **Limit in Area of Exposure:** The phased nature of the project will limit the amount of area exposed at a given time with the Phase 3 area currently stabilized with grass cover.
- **Internal Drainage:** The sites are flat enough to allow temporary grading such that runoff may be collected within the site and not directed to perimeter areas.
- **Use of Type 1 Settling:** Installing sediment traps and swales early in the construction sequence to provide secondary relief for erosion control measures within the site until late in the project when the sedimentation areas need to be removed for final restoration.

- **Restabilization:** Stabilization of areas denuded to underlying parent material must occur within stipulated time frame to minimize the period of soil exposure and stabilization of drainage paths to avoid rill and gully erosion.
- **Interim Entrapment:** The use of on-site measures to capture sediment (hay bales/silt fence, etc.) before it is conveyed to sediment traps.
- **Long Term Site Protection:** The implementation of long-term measures for erosion/sediment and pollutant treatment through the construction of permanent water quality measures.
- **Special Winter Construction Measures:** These will be required for work between September 15 and April 15.
- **Special Provision:** Special provision for pumping storage and treatment of groundwater pumped from the site.
- **Coordination of the Work:** Coordination of the work such that the lightweight concrete fill will not be disturbed after placement. Ballast shall be placed s soon as practicable to avoid damage to the concrete.

3.0 DESCRIPTION AND LOCATION OF LIMITS OF ALL PROPOSED EARTH MOVEMENTS

The construction of the project will disturb about 3.5 acres of land plus the right of way for Somerset Street between Elm Street and Pearl Street, on the Chestnut right of way near the project areas on the future Pearl Street Extension, and limited work on the trail and Elm Street. Chestnut and Somerset Streets will be raised in grade either as part of this project or a separate coordinated City project. The limit of disturbance is generally coincident with the limit of the land area plus the narrow strip of land between the right of way and the cub line of the street.

The earth moving will include trenching for underground utilities, excavation for water quality measures or below grade storage or treatment tanks (if any), earthwork attendant with the pile driving and foundation excavation, earthwork to prepare areas for placement of geofoam, earthwork to reshape the perimeter of the site and the area between the street curb and the property line along Somerset Street, earthwork to prepare and shape the building and parking garage pads, and placement of aggregates below the ground level building or structure pads. The project includes the placement of lightweight concrete fill in non-pile supported (i.e. outside of building) areas. This concrete is to be placed at specified thicknesses and depths and will be used when the finish grade is elevated by more than 6” above historic grades. The lightweight concrete will mitigate any increase in dead loads. The material overlying the lightweight concrete will serve as a ballast to prevent groundwater uplift of the concrete.

4.0 EROSION/SEDIMENTATION CONTROL DEVICES

As part of the site development, the Contractor will be obligated to implement erosion and sediment controls. The following devices are anticipated to be used and shall be installed as indicated on the plans or as described within this report. For further reference on these devices, see the *Maine DEP Best Management Practices for Erosion and Sediment Controls (August, 2005).*

1. Siltation fence shall be installed down slope of any disturbed areas to trap runoff borne sediments until the site is constructed or revegetated. The silt fence shall be installed per the detail provided in the plan set and inspected immediately after each rainfall and at least daily during prolonged rainfall. The Contractor shall make repairs immediately if there are any signs of erosion or sedimentation below the erosion control fence line. If such erosion is observed, the Contractor shall take proactive action to identify the cause of the erosion and take action to

avoid its reoccurrence. Typically, this requires that stabilization measures be undertaken. Proper placement of stakes and keying the bottom of the fabric into the ground is critical to the fence's effectiveness. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind the fence, the barrier shall be replaced with a stone check dam and measures taken to avoid the concentration of flows not directed to the silt fence.

2. Silt fence is shown by three types, depending upon the timing and intent, as follows:

SCHEDULE OF SILT FENCE REQUIREMENTS		
Silt Fence	**Type/Purpose**	**Time of Installation**
Condition 1	To trap sediment along the grading edge where the new contours nearly parallel existing contours and as a perimeter control to help control fugitive dust and grading that could temporarily direct water to an unintended perimeter area.	At initial site preparation, prior to other work.
Condition 2	To trap sediment from the work area; install in short sections parallel to existing contour; typically occurs where proposed and existing contours form a "V" shape.	At initial site preparation, prior to other work. On occasion, this needs to be deferred until the area for the silt fence installation can be reached.
Condition 3	To trap sediment along the base of proposed contours, typically in cut areas.	During construction after new grade is shaped. Time between work in area and shaping new grade to allow silt fence to be installed shall be minimized.

Conditions 2 and 3 silt fence will be used extensively between project activities. In the event of frozen ground where silt fence cannot be installed, a wood waste berm may be used as a substitute.

Wood waste mulch and berms that are at least 18 inches in height and 12 inches across the top are an acceptable alternative to silt fence.

3. Straw or hay mulch including hydroseeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulching should be occurring several times per week when the site construction activity is high and at sufficient intervals to reduce the period of exposure of bare soils to the time limits set forth in this plan. Mulch placed on slopes of less than 10 percent shall be anchored by applying water; mulch placed on slopes steeper than 10 percent shall be covered with fabric netting as immediately after mulching as practicable and anchored with staples in accordance with the manufacturer's recommendations. Proposed drainage channels, which are to be revegetated, shall receive Curlex blankets by American Green selected for the slope, velocity, and whether the measure is temporary or intended to be in place for a sustained period. Mulch application rates are provided in Attachment A of this section. Hay mulch shall be available on site at all times in order to provide immediate temporary stabilization when necessary. Where necessary, a windrow of crushed stone and/or gravel shall be placed at the top of the slope and directed to a temporary stone channel or pipe sluice to convey runoff down slopes. A dissipation device such as stone or a plunge pool should be installed at the base of the slope and sluice outlet to dissipate the energy of the water from the sluice or channel. It is noted that very little area of the site will be revegetated. Therefore, the use of wood wastes, crushed stone, or materials with low erosive potential are expected to have much higher use than mulching for this project.

4. Temporary sediment traps will provide sedimentation control for stormwater runoff from disturbed areas during construction until stabilization has been achieved. The sediment traps need to include a sand filter above an underdrain or a chemical coagulant to remove fine-grained sediment. The Contractor is encouraged to temporarily drain the site to an internal location where water can accumulate and be pumped to a sediment sump or other treatment measures. This is a recommendation, not a requirement since the erosion control requirements are intended to protect from fugitive dust and turbidity in runoff, not prescribe contractor means and methods,
5. Riprap or stone check dams are intended to stabilize and protect denuded soil surfaces or dissipate the energy and erosive forces from concentrated flows. Installation details and stone sizes are provided in the construction plan set on the erosion control detail sheets.
6. A construction entrance will be constructed at all access points onto the site to prevent tracking of soil onto adjacent streets. It may be necessary to wash the wheels of vehicles exiting the site to avoid tracking mud or material that will generate fugitive dust during certain periods of construction. A wheel wash will be established for this purpose.
7. A pre-manufactured SiltSack™ shall l be installed at catch basin inlets which may receive runoff from the construction activities on the site to prevent silt from entering the storm drain system.
8. Dirtbags™ will be required to be on site and available for construction dewatering. The Contractor will be required to have at least four (4) Dirtbags™ on the site with one prepared for operation prior to commencing any trenching operations. Dirtbags™ will need to be installed above filter sand and crushed stone in accordance with the details shown on the plan set.
9. The constructed surface (rooftop or parking deck) is intended to serve as the primary permanent erosion control device. Loam and seed or landscaped areas will be limited in size. Specific areas as will be shown on the landscape plans will receive sod or mulch for trees, shrubs, or planting beds. Application rates are provided in Attachment A of this section for temporary and permanent seeding.
10. Stone check dams will be installed in areas noted on the plan or as warranted, based upon observations prior to and during construction of the site.
11. Silt logs are an option for stone check dams and may be substituted provided the devices are well anchored.
12. Sorbent booms are intended to capture oils and the asphalt sheen from paved surfaces and shall be installed in all catch basins before pavement is installed.
13. DirtGlue™ is an acceptable means of temporary stabilization and is intended to form a “crust” on the surface that is resistant to erosion. However, applications where DirtGlue™ is used must be protected from traffic that would crack the “crust” and the DirtGlue™ has temperature limitations that restrict the periods of use. Use of this material shall conform to the requirements of Attachment D.
14. Concrete Wash Area: A concrete wash down area will be required and is detailed on the accompanying erosion control plans and details.

5.0 TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES

The following are planned as temporary erosion/sedimentation control measures during construction:

1. Crushed stone-stabilized construction entrances shall be placed at any construction access points from adjacent streets. The locations of the construction entrances shown on the drawings should be considered illustrative and will need to be adjusted as appropriate and located at any area where there is the potential for tracking of mud and debris onto existing roads or streets. Stone stabilized construction entrances will require the stone to be removed and replaced, as it becomes covered or filled with mud and material tracked by vehicles exiting the site. Wash-off of tires from exiting vehicles will need to be used to supplement the stabilized stone entrance during certain periods of construction particularly those involving the handling or traversing through areas of fine-grained soils.

2. Conditions 1 and 2 silt fence or wood waste berms shall be installed along the downgradient side of the proposed work and staging areas. The silt fence or wood waste berms will remain in place and properly maintained until the site is acceptably stabilized and in proximity to the completion of the project. Condition 3 silt fence is to be used along the contour of significant fill slopes as illustrated on the erosion control plan site drawings. Silt fence needs to be checked to insure the bottom is properly keyed in and inspected after significant rains. Wood chips are often used on the construction side of the silt fence to provide an extra margin of safety and security for the silt fence. This practice is encouraged, provided the chips are removed when the fence is removed.

3. Dirtbags™ shall be installed in accordance with the details in the plan set. The purpose of the Dirtbags™ is to receive any water pumped from excavations during construction. A Dirtbag™ shall be installed and prepared for operation prior to any trenching on site. When Dirtbags™ are observed to be at 50% capacity, they shall be cleaned or replaced. Stone and filter sand under the Dirtbag™ shall be removed and replaced concurrently with the replacement of the Dirtbag™.

4. Temporary stockpiles of common excavation will be protected as follows:
   a) Temporary stockpiles shall not be located within a portion of the site that drains to a sedimentation trap.
   b) Inactive loam or fine-grained soil stockpiles shall be stabilized within five days by either temporarily seeding the stockpile with a hydroseed method containing an emulsified mulch tackifier or by covering the stockpile with mulch. If necessary, mesh shall be installed to prevent wind from removing the mulch.

5. All denuded areas except gravel, crushed stone, or wood waste areas shall receive mulch, erosion control mesh fabric, or other approved temporary erosion sediment measure within 7 days of initial disturbance of soil or before a predicted rain event of >1/2” unless permanent measures are installed.

6. All soils disturbed between September 15 and April 15 will be covered with gravel, crushed stone wood wastes or mulch within five days of disturbance, prior to any predicted storm event of the equivalent of ½” of rainfall in a 24-hour period, or prior to any work shutdown lasting more than 35 hours (including weekends and holidays). The mulch rate shall be double the normal rate.

   For work that is conducted between September 15 and April 15 of any calendar year, all denuded areas not covered with gravel, wood waste, or crushed stone will be covered with hay mulch, applied at twice the normal application rate, and (in areas over 10% grade) anchored with a fabric netting. If the gravel has fines which contribute to sedimentation, it shall be covered with stone or wood wastes. The time period for applying gravel, stone, wood wastes, or mulch shall be limited to five days for all areas, or immediately in advance of a predicted rainfall event.

7. Stone check dams, silt logs, or hay bale barriers will be installed at any evident concentrated flow discharge points during construction and earthwork operations.

8. Silt fencing with a maximum stake spacing of 6 feet should be used, unless the fence is supported by wire fence reinforcement of minimum 14 gauge and with a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The bottom of the fence should be properly anchored a minimum of 6" per the plan detail and backfilled. Any silt fence identified by the Owner or reviewing agencies as not being properly installed during construction shall be immediately repaired in accordance with the installation details.

9. Storm drain catch basin inlet protection shall be provided through the use of a premanufactured SiltSack™. Outside of areas subject to traffic or vehicular movements, the inlets shall be surrounded by rice straw wattles placed in a circumference of 20 feet and across areas where water flows to the inlet. The barriers or SiltSacks™ shall be inspected after each rainfall and repairs made as necessary, including the removal of sediment. Sediment shall be removed and the barrier or SiltSack™ restored to its original dimensions when the sediment has accumulated to one-half the design depth of the barrier. Sediment shall be removed from SiltSacks™ as necessary. Inlet protection shall be removed when the tributary drainage area has been stabilized.

10. All slopes steeper than 4:1 shall receive erosion control mesh.

11. Condition 3 silt fences shall be installed as construction progresses.

12. Areas of visible erosion and the temporary sediment traps shall be stabilized with crushed stone. The size of the stone shall be determined by the Contractor's designated representative in consultation with the Owner.

13. New catch basins within the site catch basins shall all be installed with an opening 2'-6" below finish grade to receive a 4" underdrain with an end cap except for inlets along underdrains. A 3'-0" stub of underdrain surrounded by 6" of ¾" crushed stone and filter fabric shall be installed. The purpose of this measure is to provide drainage relief until site grades are at finish elevations.

14. All catch basins, which receive runoff from current or paved areas being constructed as part of this project, shall have a sorbent boom installed prior to placing the basin in operation installing binder pavement, or overlays. These sorbent booms shall be checked weekly for the three weeks following paving and replaced as necessary with the booms disposed of in accordance with local and State regulations.

15. Any flow from the site that is concentrated must be directed to a sediment trap or Dirtbag with underlying sand filter, an underdrained filter discharge, or a containerized stormwater treatment device.

16. Concentrated runoff shall be diverted away from slopes of over 10 percent unless the slope is armored with stone.

17. Underground utilities must be installed in compliance with the following standards and other requirements of this erosion control plan:

- No more than 500 linear feet of trench may be opened at one time;
- Excavated materials shall be placed on the uphill side of trenches;
- Dewatering of the trench shall be pumped through a Dirtbag™ and appropriate sediment control facilities to avoid a turbid discharge; and
- Stabilization shall occur as soon as practicable.

18. Truck wheel washes will be required if tracking of deleterious material onto local streets is observed.

19. A concrete wash down area shall be provided.

20. Maintenance of the erosion control, sedimentation facilities, and control of fugitive dust must occur until the site is stabilized with permanent erosion control measures. For turf areas, stabilization shall be defined to be the establishment of a 90 percent "catch of grass" with no areas larger than 2 square feet, and no spots that cumulatively add up to more than 5 square feet per 100 square feet.

21. Treatment Tanks: Containerized water treatment devices required to treat any groundwater encountered and pumped from the excavation to the levels defined by the environmental remediation plan. A draft specification is provided as Attachment F. However, this shall be reviewed for consistency with the final requirements of the environmental cleanup plan.

6.0 STANDARDS FOR STABILIZING SITES FOR THE WINTER

The construction of the project will require winter construction with the duration of each phase subject to variation. Winter construction will be allowed but the contractor should be aware that the minimum erosion control measures are substantially more stringent than during other periods of the year due to the cold temperatures and lack of weather conditions which aid in drying the subgrade soils through evaporation.

If construction activities involving earth disturbance continue past September 15 or begin before April 15, the following must be incorporated with the erosion control plan and implementation:

1. Enlarged access points must be stabilized to provide for snow stockpiling.
2. Limits of disturbance shall be reduced to the extent practicable.
3. A snow management plan including adequate storage and control of snowmelt, requiring cleared snow to be stored downgradient of all areas of disturbance shall be prepared by the Contractor and submitted to the Owner for review and approval.
4. Snow shall not be stored in sediment basins or to preclude drainage structures from operating as intended.
5. A minimum 25-foot buffer maintained from perimeter controls such as silt fence shall be maintained on the "work area side" of staging and stockpile areas where possible to allow for snow clearing and maintenance.
6. Drainage systems intended to operate during the winter shall be catalogued, shown on a plan, and inspected after each snow removal period to make sure the drainage structures are open and free of snow and ice dams.
7. To ensure cover of disturbed soil in advance of a melt event, areas of disturbed soil must be stabilized at the end of each work day, with the following exceptions:

- If no precipitation within 24 hours is forecast and work will resume in the same disturbed area within 24 hours, daily stabilization is not necessary.
- Disturbed areas that collect and retain runoff, such as house foundations or open utility trenches.

8. <u>Standard for the timely stabilization of disturbed slopes</u>: The Contractor shall construct and stabilize stone-covered slopes by September 15. The Contractor shall seed and mulch all slopes to be vegetated by September 1. The Owner will consider any area having a grade greater than 15% to be a slope. If the Contractor fails to stabilize any slope to be vegetated by September 1, then the Contractor shall take one of the following actions to stabilize the slope for late fall and winter.

   i. Stabilize the soil with temporary vegetation and erosion control mesh. By September 15, the Contractor shall seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1,000 square feet and apply erosion control mats over the mulched slope. The Contractor shall monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed slope by September 15, then the Contractor shall cover the slope with a layer of wood waste compost as described in item iii of this standard or with stone rip rap as described in item iv of this standard.

   ii. Stabilize the slope with sod. The Contractor shall stabilize the disturbed slope with properly installed sod by September 15. Proper installation includes the Contractor pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The Contractor shall not use late-season sod installation to stabilize slopes having a grade greater than 33% (3H:1V) or having groundwater seeps on the slope face.

   iii. Stabilize the slope with wood waste compost. The Contractor shall place a six-inch layer of wood waste compost on the slope by September 15. Prior to placing the wood waste compost, the Contractor shall remove any snow accumulation on the disturbed slope. The Contractor shall not use wood waste compost to stabilize slopes having grades greater than 50% (2H:1V) or having groundwater seeps on the slope face.

   iv. Stabilize the slope with stone rip rap. The Contractor shall place a layer of stone riprap on the slope by September 15. The Contractor shall hire a registered professional engineer to determine the stone size needed for stability and to design a filter layer for underneath the riprap.

9. <u>Standard for the timely stabilization of disturbed soil (not in slope areas)</u>: By September 1, the Contractor shall seed and mulch all disturbed soils on areas having a slope less than 15%. If the Contractor fails to stabilize these soils by this date, then the Contractor shall take one of the following actions to stabilize the soil for late fall and winter.

   i. Stabilize the soil with temporary vegetation. By September 15, the Contractor shall seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1,000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1,000 square feet, and anchor the mulch with plastic netting. The Contractor shall monitor the growth of the rye over the next 30 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before September 15, then the Contractor shall mulch the area for over-winter protection as described in Item iii of this standard.

   ii. Stabilize the soil with sod. The Contractor shall stabilize the disturbed soil with properly installed sod by September 15. Proper installation includes the Contractor pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

iii. Stabilize the soil with mulch or wood waste mulch. By September 15, the Contractor shall mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1,000 square feet on the area so that no soil is visible through the mulch. Prior to applying the mulch, the Contractor shall remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the Contractor shall anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil. Wood waste mulch shall be uniformly applied and a minimum of 3 inches in thickness.

iv. Stabilize all stockpiles with mulch within 24 hours.

7.0 SPECIAL MEASURES FOR SUMMER CONSTRUCTION

The summer period is generally optimum for construction in Northern New England but it is also the period when intense short duration storms are most common, making denuded areas very susceptible to erosion, when dust control needs to be the most stringent, and when the potential to establish vegetation is often restricted by moisture deficit. During these periods, the Contractor must:

1. Implement a program to apply dust control measures on a daily basis except those days where the precipitation exceeds 0.25 inch. This program shall extend to and include adjacent streets used by construction vehicles and include multiple street washings per day. Wheel washing of construction vehicles leaving the site may be necessary.

2. Spray any mulches with water after anchoring to dampen the soil and encourage early growth. Spraying may be required several times. Temporary seed may be required until the late summer seeding season.

3. Mulch, cover, and moisten stockpiles of fine-grained materials, which are susceptible to erosion. In the summer months, the potential for wind erosion is of concern, as well as erosion from the intense, short-duration storms, which are more prevalent in the summer months.

4. Take additional steps needed to control fugitive dust emissions to minimize reductions in visibility and the airborne disbursement of fine-grained soils.

These measures may also be required in the spring and fall during the drier periods of these seasons.

8.0 SEDIMENTATION TRAPS

The sediment trap shall provide 3,600 cubic feet of storage per acre of treated area.

Discharge must be through a sand filter over an underdrained outlet to aid in the control of turbidity levels in the discharge. In the event that two events where the turbidity is excessive, the Contractor will be required to install containerized treatment systems with proper additives to meet the discharge standard.

The contractor may elect not to construct the sedimentation sumps if the work area is covered with non-erodible materials such as gravel, stone or wood waste mulch, and alternative runoff treatment is provided using containerized treatment units and Dirtbags provided they appear to be adequate for turbidity controls.

9.0 GROUNDWATER PUMPED FROM ON SITE EXCAVATIONS

Groundwater pumped from excavations on the site shall be considered contaminated. The contaminated groundwater is to be pumped, stored, and treated.

Only contaminated groundwater that needs to be extracted during site excavations, grading, during construction of foundation systems and other structures, during the installation of underground utilities, and during the construction of other below grade elements of the project items will require storage and treatment. Contaminated groundwater that is not encountered during construction will not be addressed and will remain below the ground surface. All liquids if removed by excavation dewatering requires handling, storage, and treatment in accordance with applicable local, State, and Federal regulations prior to discharge to the municipal stormwater system:

- **Pumping:** Pumping shall be from a sump where the inlet screen has been placed within an encasement of crushed stone. The crushed stone is intended to minimize the unnecessary removal of soil that could otherwise be dislodged during the pumping operation. The amount of stone should be based upon in-situ operations of the discharge stream and turbidity measurements. Testing of groundwater collected before pumping begins shall be used as a baseline. Testing of the discharge stream shall be compared with the pre-pump conditions to determine if unnecessary sediment is being mixed with the groundwater during the pumping process. If excess sediment is being removed either the pump rate needs to be reduced or the amount of stone around the intake needs to be increased.

- **Storage:** Store groundwater that is collected at the Site, as necessary, as part of construction dewatering in frac tanks compliance with all applicable provisions of the federal, state and local laws, regulations, or bylaws for subsequent treatment. Only groundwater that is pumped from the excavation on the site needs to be treated prior to disposal.

- **Treatment:** The treatment requirements are outlined in Attachment F. The requirements shall also be subject to the final land use restrictions included in land deeds and prepared after the final remediation has been completed,.

10.0 PERMANENT EROSION CONTROL MEASURES

The following permanent erosion control measures have been designed as part of the Erosion and Sedimentation Control Plan:

1. The drainage conveyance systems will be or have been designed to intercept and convey the 25-year storm event.

2. All areas disturbed during construction, but not subject to other restoration (rooftops, parking decks, hardscape, mulched planting beds or trees) will be loamed, limed, fertilized, mulched, and seeded or sodded if required by the landscape plan for a particular phase of the project. Fabric netting, anchored with staples, shall be placed over the mulch in areas where the finish grade slope is greater than 10 percent. Native topsoil shall be stockpiled and temporarily stabilized with seed and mulch and reused for final restoration when it is of sufficient quality.

3. Catch basins shall be provided with sediment traps for all outlet pipes that are 12” in diameter or greater. Catch basins within the site have been designed with an under drain connection to allow the subbase gravel to drain and reduce frost heave and movement at the basin. A sediment collection bag and an oil sorbent pillow shall be installed in all basins.

4. Permanent seeding shall be conducted only in April through May and in late summer until September 15.

5. Water quality units and underground storage systems will be incorporated into the project to meet water quality standards. These systems shall not be activated until the site is stabilized and the pavement has "cured" for at least 30 days.

11.0 TIMING AND SEQUENCE OF EROSION/SEDIMENTATION CONTROL MEASURES

The site is quite stable and drained to stable or depressional areas before entering the City's drainage system. Only limited areas of erosion were noted where Catchment B-1 discharges over the driveway apron to Somerset Street. A stone check dam to spread this flow is recommended to be installed early during construction.

The construction sequence will require the scheduling of work below the planned lightweight concrete fill to be in place before the lightweight concrete fill is placed. The lightweight concrete fill will need to be ballasted as soon as possible to prevent potential damage from hydrostatic uplift.

During construction, the following sequence should be used:

- Safety and security fence should be installed around the work areas and any staging or stockpile areas.
- The site should be inspected and any areas that exhibit erosion should be stabilized.
- Inlets to the work area and in close proximity should be protected with silt sacs. The silt sacs have the advantage of not interfering with traffic movements. Where possible, rice straw wattles should be placed circumferally around the portion of the inlet that receives runoff from the project.
- Dirtbags™ should be installed above a sand and crushed stone cushion as depicted on the erosion control detail sheets.
- Stabilized construction entrances should be installed to work and staging areas.
- Silt fence or silt barriers constructed of wood waste should be installed around the perimeter of the site and perpendicular to contours.
- The concrete wash area should be prepared.
- Sedimentation sumps or treatment tanks should be constructed or installed.
- The perimeter of the site should be inspected. Stone check dams should be installed about 30 feet upstream of any discharge leaving the site or flowing to an inlet.
- Material that is highly erodible in the work area or should be either covered with wood waste, stone, or an erosion resistant cover (even a free drainage gravel will be very beneficial).
- Containerized treatment systems should be set up for the treatment of any groundwater encountered and pumped from the work area excavations.

Once construction begins, it will be important to maintain the stabilized construction entrance. Wash-off of the tires from trucks and equipment entering and leaving the site depending upon the time of year and extent of activity to prevent dust or turbidity along the public right of ways.

A discrete parking lot is recommended for construction workers during construction. During some of the work, the use of the parking garage or a leased lot may be required. Any partial or temporary street closures will require the approval from the City of Portland. This element of the project is discussed in the construction phasing portion of the application.

12.0 CONTRACTING PROCEDURE

The project will be constructed by a General Contractor under contract to the lessee. The Contractor shall submit a schedule for the completion of the work, which will satisfy the following criteria:

1. The installation of the "prior to construction activities" shall be completed before other site construction begins. The runoff throughout the duration of the construction shall be pretreated with a Dirtbag™, discharges to a sedimentation trap, and/or treated using containerized treatment systems.

2. The schedule shall be subject to the approval of the Owner.

3. The Contractor must maintain an accurate set of record drawings indicating the date when an area is first denuded, the date of temporary stabilization, and the date of final stabilization. On September 15 of any calendar year, the Contractor shall submit a detailed plan for stabilizing the site for the winter and a description of what activities are planned during the winter.

4. The Contractor must install any added measures which may be necessary to control erosion/sedimentation and fugitive dust emissions from the site, with adjustments made dependent upon forecasted and actual site and weather conditions.

5. Certain erosion control products (such as DirtGlue™) come in a form that a release could occur on the site or into the environs. The Contractor shall include MSDS information for all products that have the potential for release to the environment and shall be responsible for implementing a safety control program for proper handling of these materials on the site.

6. The Stormwater Pollution Prevention Plan (SWPPP) is defined to consist of the Erosion Control Report, the Stormwater Management Plan, and the Stormwater O&M Plan. The SWPPP shall be maintained at a secure locked location at the Contractor's field trailer from commencement of the project. These documents shall be moved to a designated locked location inside the store at the period when the Contractor's trailers are removed and maintained until the Notice of Termination has been filed by the Owner. A notice and point of contact with cell phone number shall be posted at the trailer to permit access to the records during normal work hours.

   All additions and construction records shall be copied via e-mail to the following addresses:

   sbuskey@fstinc.com
   bkennedy@fstinc.com

   The Owner reserves the right to add additional personnel to this list at the pre-construction conference or at reasonable intervals during the project.

7. The Owner will provide a copy of the NOI acceptance letter to the Contractor. This letter shall be maintained at the site with the SWPPP.

8. Any revisions to the SWPPP must be authorized in writing by the Preparer of the Plan (Fay, Spofford & Thorndike) The Preparer of the Plan shall be permitted reasonable time to review and notify the City of Portland and other agencies of said changes. Revisions to the SWPPP will be required:

   a. Whenever the current provisions prove to be ineffective in minimizing pollutants in stormwater *discharges* from the site;

   b. Whenever there is a change in design, construction, or operation at the construction site that has or could have an effect on the discharge of pollutants; and

   c. To address issues or deficiencies identified during an inspection by the *qualified inspector*, the Department, or other regulatory authority.

9. Should the Owner notify the Contractor that the activity on the site is in violation of the SWPPP, the Contractor shall correct the deficiencies and file a photographic log with a list of corrective actions with the Owner within seven (7) days of notification by the Owner.

10. The Contractor shall engage a qualified inspector to monitor the work. This inspector shall be approved by the Owner prior to the individual being engaged on the project. This inspection shall be a part of the Contractor's Quality Control Plan for the project by the Contractor. The inspector's qualifications and duties that he shall perform are as follows:

    a. Licensed Professional Engineer or Certified Professional in Erosion Control

    b. Covered by Workman's Compensation Insurance

    c. Experienced in this type of work, the specific erosion controls applicable to this project with a resume approved by the engineer

    d. Compensated on a unit rate basis with no incentives for reduced costs or subject to any type of compensation for passing inspections

    e. Approved by the Owner and the preparer of this plan

    The *qualified inspector*s shall conduct site inspections in accordance with the following timetable:

    a. Where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

    b. Where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *inspector* shall notify the Owner's designated representative if any problems or corrective measures are required.

c. Where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the Owner's representative and the City of Portland in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the Contractor shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization*, and all temporary, structural erosion and sediment control measures have been removed, and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the MeDEP and the City of Portland.

At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization*, all points of discharge to natural surface water bodies located within, or immediately adjacent to, the property boundaries of the construction site, and all points of discharge from the construction site.

The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

1. Date and time of inspection;
2. Name and title of person(s) performing inspection;
3. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
4. A description of the condition of the runoff at all points of discharge from the construction site and sampling results. This shall include identification of any *discharges* of sediment from the construction site. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
5. A description of the condition of all natural surface water bodies located within, or immediately adjacent to, the property boundaries of the construction site which received runoff from disturbed areas. This shall include identification of any *discharge* of sediment to the surface water body;
6. Identification of all erosion and sediment control practices that need repair or maintenance;
7. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
8. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;
9. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

10. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and
11. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.
12. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the Owner the appropriate Contractor or Subcontractor of any corrective actions that need to be taken. The Contractor or Subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.
13. All inspection reports shall be signed by the *qualified inspector*. The inspection reports shall be maintained on site with the SWPPP and distributed via email at the time of filing.
14. The Owner reserves the right to have quality assurance monitoring of the work. The Contractor shall cooperate with the Owner and their quality assurance monitoring of the work including maintaining an accurate schedule for performing the work. The Owner will notify the Contractor if any particular elements of the work should be uncovered or available for observation by the Quality Assurance Monitor selected by the Owner. The Owner reserves the right to conduct the quality assurance monitoring during working hours at any time during the project.

13.0 PROVISIONS FOR MAINTENANCE OF THE EROSION/SEDIMENTATION CONTROL FEATURES

The project will be contracted to a General Contractor. The project is subject to the requirements of the local permits, and a state regulated Construction General Permit (MCGP).

This project requires the Contractor to prepare a list and designate by name, address and telephone number all individuals who will be responsible for implementation, inspection, and maintenance of all erosion control measures identified within this section and as contained in the Erosion and Sedimentation Control Plan of the contract drawings. Specific responsibilities of the inspector(s) will include:

1. Execution of the Contractor/Subcontractor Certification contained in Attachment B by any and all parties responsible for erosion control measures on the site as required by the permit authorities.
2. Assuring and certifying the Owner’s construction sequence is in conformance with the specified schedule of this section. A weekly certification stating compliance, any deviations, and corrective measures necessary to comply with the erosion control requirements of this section shall be prepared and signed by the inspector(s).

3. In addition to the weekly certifications, the inspector(s) shall maintain written reports recording construction activities on site which include:
   - Dates when major grading activities occur in a particular area.
   - Dates when major construction activities cease in a particular area, either temporarily or permanently.
   - Dates when an area is stabilized.

4. Inspection of this project work site on a weekly basis and after each significant rainfall event (0.5 inch or more within any consecutive 24-hour period) during construction until permanent erosion control measures have been properly installed and the site has been stabilized. Inspection of the project work site shall include:
   - Identification of proper erosion control measure installation in accordance with the erosion control detail sheet or as specified in this section.
   - Determine whether each erosion control measure is properly operating. If not, identify damage to the control device and determine remedial measures.
   - Identify areas which appear vulnerable to erosion and determine additional erosion control measures which should be used to improve conditions.
   - Inspect areas of recent seeding to determine percent catch of grass. A minimum catch of 90 percent is required prior to removal of erosion control measures.
   - All erosion controls shall be removed within 30 days of permanent stabilization except for mulch and netting not detrimental to the project. Removals shall include, but not be limited to, all silt fence, hay bales, inlet protection, and stone check dams.
   - Accumulated silt/sediment should be removed when the depth of sediment reaches 50 percent of the barrier height. Accumulated silt/sediment should be removed from behind silt fencing when the depth of the sediment reaches 6 inches.
   - Silt sacks should be removed and replaced at least every three months and at any time where the weekly inspection reveals that siltation has significantly retarded the rate of flow through the silt sack.
   - Documentation of coordination of raw and treated groundwater sampling with the qualified environmental specialist, a summary of groundwater pumping activity since the last site report, and identification of where sample results can be obtained with any exceedance of the standards noted.
5. If inspection of the site indicates a change should be made to the Erosion Control Plan, to either improve effectiveness or correct a site-specific deficiency, the inspector shall immediately implement the corrective measure and notify the Owner of the change.
6. Arranging for an on-site meeting prior to commencing winter construction to assure that all special winter construction measures will be implemented and to review the specific requirements of this plan for winter construction.

All certifications, inspection forms, and written reports prepared by the inspector(s) shall be filed with the Owner, and the Permit File contained on the project site. All written certifications, inspection forms, and written reports must be filed within one (1) week of the inspection date.

The Contractor has sole responsibility for complying with the Erosion and Sedimentation Control Report, including control of fugitive dust, and shall be responsible for any monetary penalties resulting from failure to comply with these standards.

The contract specifications for erosion and sedimentation control have additional requirements and are appended to this narrative (Attachment C). The Contractor shall also comply with the Cumberland County Soils Conservation and the MeDEP Best Management Practices in effect at the time of construction.

Once construction has been completed, long-term maintenance of the stormwater management system will be the responsibility of the Applicant. Inspection and Maintenance items with a list of maintenance requirements and frequency are described in a separate document.

14.0 PRECONSTRUCTION CONFERENCE

Prior to any construction at the site, representatives of the Contractor, the Owner, and the site design engineer and any personnel identified in the permit conditions shall meet to discuss the scheduling of the site construction and the designation of the responsible parties for implementing the plan. The Contractor shall be responsible for scheduling the meeting. Prior to the meeting, the Contractor will prepare a detailed schedule and a marked-up site plan indicating areas and components of the work and key dates showing date of disturbance and completion of the work. The Contractor shall conduct a meeting with employees and sub-contractors to review the erosion control plan, the construction techniques which will be employed to implement the plan, and provide a list of attendees and items discussed at the meeting to the Owner. Three copies of the schedule, the Contractor’s meeting minutes, and marked-up site plan shall be provided to the Owner.

15.0 ATTACHMENTS

Attachment A –	Seeding Plan
Attachment B –	Sample Erosion Control Compliance Certification and Inspection Forms
Attachment C –	Erosion Control Specifications
Attachment D –	DirtGlue™ Application and Use Requirements
Attachment E –	Special Dewatering Specification Prepared by Tewhey Associates and Edited by DeLuca-Hoffman Associates, Inc./Fay, Spofford & Thorndike
Attachment F –	Draft Specification for Groundwater Treatment System

16.0 PLAN REFERENCES

Drawings C-6.0 to C-6.5	Erosion & Sedimentation Control Plans and Details

ATTACHMENT A

Seeding Plan

PERMANENT SEEDING PLAN (LAWNS)

Project: midtown

Site Location: Portland, Maine

X Permanent Seeding ______ Temporary Seeding

1. **Area to be Seeded:** Approximately ___ acre(s) or 12 /M. Sq. Ft.

2. **Instructions on Preparation of Soil:** Prepare a good seed bed for planting method used (do not over compact).

3. **Apply Lime as Follows:** __________ #/acres or 138# /M Sq. Ft. or per soil test

4. **Fertilize:** _______ pounds of __________ - ___________N-P-K/ac.

   20 pounds of 10-20-20 N-P-K/M Sq. Ft. or per soil test

5. **Method of Applying Lime and Fertilizer:** Spread and work into the soil before seeding.

6. **Seed with the following mixture:**

   35% Kentucky Bluegrass
   20% Creeping Red Fescue
   15% Chewings Fescue
   15% Perennial Ryegrass
   15% Annual Ryegrass

7. **Mulching Instructions**: Apply at the rate of _____ tons per acre or 230 pounds per M. Sq. Ft.

8. **Application:**

Type	Unit#	Tons, Etc.
Total Lime	138	#/1,000 s.f.
Total Fertilizer	20	#/1,000 s.f.
Total Seed	5	#/1,000 s.f.
Total Mulch	230	#/1,000 s.f.
Total Other		

9. **Remarks:**

   Seeding dates April 15 to May 31 and August 1 until September 1. Permanent seeding should be made prior to September 1 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

   Fertilizer requirements shall be subject to actual test results of the topsoil used for the project. The Contractor shall be responsible for providing topsoil test results for pH and recommended fertilizer application rates to the Owner.

Seed mixture shall be fresh, clean, new crop seed. Seed may be mixed by an appropriate method on the site or may be mixed by the dealer. If the seed is mixed on the site, each variety shall be delivered in the original containers bearing the dealer’s guaranteed analysis. If seed is mixed by the dealer, the Seeding Contractor shall furnish to the Owner the dealer’s guaranteed statement of the composition of the mixture and the percentage of purity and germination of each variety.

Seed shall be purchased from a recognized distributor and shall test to a minimum percentage of 95% for purity and 85% for germination.

All loam shall have compost or peat admixtures to raise the organic content to 8%.

Deep tine aerate if soil is compact.

TEMPORARY SEEDING PLAN (EROSION CONTROL MIX)

Project: midtown

Site Location: Portland, Maine

__X__ Permanent Seeding __X__ Temporary Seeding

1. **Area to be Seeded:** Approximately __1.5__ acre(s) or _____/M. Sq. Ft.

2. **Instructions on Preparation of Soil:** Prepare a good seed bed for planting method used.

3. **Apply Lime as Follows:** __________ #/acres or __138#__/M Sq. Ft. or per soil test

4. **Fertilize:** _______ pounds of __________ **-** ___________N-P-K/ac.

   __20__ pounds of 10-10-10 N-P-K/M Sq. Ft. or per soil test

5. **Method of Applying Lime and Fertilizer:** Spread and work into the soil before seeding.

6. **Seed with the following mixture:**

Annual Rye-grass	50%
Timothy	25%
Winter Rye	25%

7. **Mulching Instructions**: Apply at the rate of _____ tons per acre or__230__ pounds per M. Sq. Ft.

8. **Application:**

Type	**Unit#**	**Tons, Etc.**
Total Lime	138	#/1,000 s.f.
Total Fertilizer	20	#/1,000 s.f.
Total Seed	1	#/1,000 s.f.
Total Mulch	230	#/1,000 s.f.
Total Other		

9. **Remarks:**

For areas with slopes >10% and fall and winter erosion control areas, mulch netting shall be used per manufacturer's specifications.

Permanent seeding should be made prior to September 1 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

Fertilizer requirements shall be subject to actual test results of the topsoil used for the project. The Contractor shall be responsible for providing topsoil test results for pH and recommended fertilizer application rates to the Owner.

Seed mixture shall be fresh, clean, new crop seed. Seed may be mixed by an appropriate method on the site or may be mixed by the dealer. If the seed is mixed on the site, each variety shall be delivered in the original containers bearing the dealer's guaranteed analysis. If seed is mixed by the dealer, the Seeding Contractor shall furnish to the Owner the dealer's guaranteed statement of the composition of the mixture and the percentage of purity and germination of each variety.

Seed shall be purchased from a recognized distributor and shall test to a minimum percentage of 95% for purity and 85% for germination.

ATTACHMENT B

Sample Erosion Control Compliance Certification and Inspection Forms

MAINE CONSTRUCTION GENERAL PERMIT
CONTRACTOR/SUBCONTRACTOR CERTIFICATION

PROJECT INFORMATION

Project Name: midtown
Address: Portland, Maine

CONTRACTOR/SUBCONTRACTOR INFORMATION

Firm Name:
Address:
Telephone:
Type of Firm:

CERTIFICATION STATEMENT

"I certify under penalty of law that I understand the terms and conditions of the Maine Construction General Permit (MCGP) permit that authorizes the stormwater discharges associated with construction activity from the project site identified as part of this certification."

____
Signature

____
Typed Name

____
Title

____
Date

MAINE CONSTRUCTION GENERAL PERMIT

INSPECTION REPORT

PROJECT INFORMATION

Project Name: midtown

Address: Portland, Maine

INSPECTOR INFORMATION

Inspector Name: ______________________________

Firm: ______________________________

Title: ______________________________

Qualifications: ______________________________

Weather and Soil Conditions: ______________________________

INSPECTION SUMMARY

Date of Inspection: ______________________________

Major Observations: ______________________________

____

____

____

1. Attach the following to the Report:

   a. A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any *discharges* of sediment from the construction site. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

   b. A description of the condition of all natural surface water bodies located within, or immediately adjacent to, the property boundaries of the construction site which received runoff from disturbed areas. This shall include identification of any discharge of sediment to the surface water body;

   c. Identification of all erosion and sediment control practices that need repair or maintenance.

   d. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

   e. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;

    f. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPP and technical standards;

    g. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and

    h. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

2. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the owner the appropriate contractor or subcontractor of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

3. All inspection reports shall be signed by the *qualified inspector*. The inspection reports shall be maintained on site with the SWPP and distributed via email at the time of filing.

THE FACILITY IS IN COMPLIANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN WITH THE FOLLOWING EXCEPTIONS:

____

____

____

____

ACTIONS NECESSARY TO BRING FACILITY INTO COMPLIANCE:

____

____

REQUIRED MODIFICATIONS TO STORMWATER POLLUTION PREVENTION PLAN (MUST BE SUBMITTED WITHIN 2 DAYS OF INSPECTION TO OWNER FOR APPROVAL):

____

____

____

____

CERTIFICATION STATEMENT:

"I certify under penalty of law that this document and all Appendices were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the systems, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of find and imprisonment for knowing violations."

____
Signature

____
Typed Name

____
Title

____
Date

ATTACHMENT C

Erosion Control Specifications

SECTION 312513 – EROSION CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Temporary and permanent erosion control systems.

B. Slope Protection Systems.

1.2 RELATED SECTIONS

A. Section 017000.01 – Site Permit Requirements

B. Section 311000 – Site Clearing

C. Section 312000 – Earth Moving

D. Erosion and Sedimentation Control Report

E. Construction Requirements

1.3 ENVIRONMENTAL REQUIREMENTS

A. The Contractor shall protect adjacent properties and water resources from erosion and sediment damage throughout the life of the construction contract in accordance with the Erosion and Sediment Control Report prepared for this project and in accordance with the requirements of the MeDEP Chapter 500 Stormwater Standards and special conditions of the permits. The Erosion and Sediment Control Report and Site Permits have specific restrictions on seasonal work limits, the amount of area which can be exposed at a given time, the general sequence of construction, and contractor monitoring. These affect the scheduling of the work.

Protected resources as referred to in this document include wetlands, streams or water bodies, and trees or vegetation outside of the work limit.

Prior to grubbing, orange safety fence shall be installed between the limit of grading and any protected resource. When the protected resource is a tree, the safety fence shall be installed at the drip line of the tree. If disturbance of the root system occurs, the Contractor shall have an Arborist or Nurseryman inspect the root system and provide recommendations to preserve the tree. This information shall be included in the logs for the Erosion Control Plan maintained by the Contractor.

B. The General Contractor will be required to designate, by name, a Registered Professional Engineer or equivalent person responsible for implementation of all erosion control measures as required by the MCGP for this project and this specification. Specific responsibilities will include:

1. Assuring and certifying the contractor's construction sequence is in conformance with the specified schedule. In addition, a weekly certification stating compliance, any deviations, and corrective measures shall be filed with the owner by this person.

   A copy of the certification form is contained the Erosion and Sedimentation Control Report.

2. Inspection of the project work site on a weekly basis, with the installation of added erosion control measures in areas which appear vulnerable to erosion. The erosion and sediment measures shown on the contract documents are minimum provisions. Any additional measures required to comply with the permit or intent of the Erosion and Sedimentation Control plan shall be incidental to the contract.

3. Inspection of all erosion control measures and drainage inlets after any significant rainfall. Accumulated silt/sediment should be removed when the depth of sediment reaches 50 percent of the barrier height. Accumulated silt/sediment should be removed from behind silt fencing when the depth of the sediment reaches 6 inches. A significant rainfall shall be defined as over ½ inch of precipitation in any consecutive 24-hour period.

4. Inspect areas for catch of grass. A minimum catch of 90 percent is required prior to removal of erosion control measures.

5. Maintaining precipitation records and monitoring forecast activity.

C. The Owner/Engineer, Engineer will provide either an FTP site or email address for the erosion control monitoring reports to be provided to the Owner.

D. It shall be the responsibility of the Contractor to implement, maintain, monitor, and document compliance with the erosion and sediment control plan for the project and to avoid turbid discharges from the site, to avoid fugitive dust emissions, to avoid sediment from leaving the site, or affecting areas outside of the project work limits.

The work includes the submission of logs and photographic evidence of compliance with the plan at the time each pay requisition is submitted. These records shall be certified as complying with the Erosion Control Plan and this specification. Deficiencies in the logs or photographic records identified by the Owner or Engineer shall be corrected before the pay requisition is processed.

The photographic documentation must include:

1. A minimum of 10 digital photos per week showing the appropriate erosion control measures in place.

2. Evidence of stabilization of areas that are not being actively worked.

3. Documentation of any observed releases of turbid runoff or failure of any erosion control measure.

E. The erosion control measures specified are required to be installed in accordance with the details provided with the construction plans and manufacturer's recommendations. The method and details of the installation of these erosion control methods are of vital importance to insure the effectiveness of the erosion control measures. While precipitation amounts cannot be predicted, the Erosion Control Plan is designed to minimize erosion by restricting the amount of the site that can be open at a given time, limiting the period that an area can be open without stabilization, and requiring weather forecasts to be monitored. It is a requirement of the contract documents that these methods be incorporated on the site.

F. Monthly Training: The Contractor and the designated person responsible for erosion control shall conduct monthly training meetings for anyone working on the site work of the project. A log shall be maintained recording the attendance and the topics of discussion. Each meeting shall include a discussion of problems that occurred in the past month, any approved changes to the Erosion Control Plan, the anticipated upcoming four-week schedule, and a general discussion of the plan requirements.

G. Rain Gauge: The Contractor shall provide and maintain a rain gauge on the site and record the precipitation on the site during the period between the start of construction and substantial completion. A sample log is appended to these specifications.

H. A Stormwater Pollution Control Prevention Plan Log is attached to this specification for use by the Contractor. The Engineer, Regulatory Officials, and the Engineer shall attend the first training session. This shall be conducted prior to any clearing or other land disturbing activities on the site. The Contractor shall have samples and catalog cuts for the erosion control materials that will be employed at the site for review at this initial meeting.

I. Prior to submitting a pay requisition, the Contractor must certify that any employee or subcontractor and their employees working on site work for the project have received training and attended a training session for this project within the past 30 days. Any employee not trained shall not be permitted to work on the site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Quick growing grasses for temporary seeding (see seed mixes contained in Erosion and Sedimentation Report).

B. Hay or straw bales.

C. Fencing for siltation control as specified on the plans. Mirafi® prefabricated silt fence or approved equal.

D. Curlex blankets by American Excelsior Company or approved equal. Curlex® single net except Curlex double net in winter months.

E. Bale stakes shall be a minimum of 4 feet in length and 1" in width.

F. Temporary mulches such as loose hay, straw, netting, wood cellulose, or agricultural siltage.

G. Fence stakes shall be metal stakes a minimum of 8 feet in length.

H. Stone check dams shall be spaced according to the Erosion Control Detail Plan.

I. Stone Sediment Barriers or SiltSacks^{TM}, or approved equal for inlet protection.

J. A stabilized construction entrance to be constructed of the materials identified on the contract drawings.

K. Riprap for slopes, culvert, storm drain inlet, and outlet aprons.

L. Sand blankets, or non-erodible native material, to protect clay or erodible subgrades.

M. Reinforced turf. American Green P300 or approved equal.

N. Wood mulch.

O. Calcium chloride and water for dust control.

P. DIRTBAG® as outlined on the contract drawings and specified in Section 31.

Q. Catch basin inserts. SiltSacks^{TM} or approved equal.

R. Sorbent booms. Ecotech “Hula” Bug or equal.

S. DirtGlue^{TM} Polymar Emulsion Mixes. DirtGlue^{TM} emulsion formulation must be approved by Owner prior to installation.

T. Erosion Control Net. American Excelsior Curlex® “Net Free” or equal.

U. Level Lip Spreader: The level lip spreaders sham consist of the materials depicted on the drawing set including the concrete foundations, the mastic, the Linear low density polyethylene strip, and the rip rap and aggregates depicted on the details and the aluminum plates and components as shown on the drawings.. The aluminum plate shall be cut to meet the V notch specified, have notches to allow leveling and adjustment.

PART 3 - EXECUTION

3.1 PREPARATION

A. Review site erosion control plan.

B. Deficiencies or changes in the erosion control plan as it is applied to current conditions will be brought to the attention of the Engineer and Owner and a remedial action prepared and implemented by the Contractor.

3.2 EROSION CONTROL AND SLOPE PROTECTION IMPLEMENTATION

A. Provide catalog cuts and information concerning the erosion control products which will be used for construction for review by the Owner.

B. Provide information concerning the installation of the erosion sedimentation control including anchorage trench provisions anchorage devices, and spacing for review by the Owner.

C. Place erosion control systems in accordance with the erosion control plan and in accordance with approved installation procedures.

D. This contract limits the surface area of erodible earth material exposed any time by clearing and grubbing, excavation, borrow and embankment operations. The Owner has the authority to direct the Contractor to provide immediate permanent or temporary pollution control measures. The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practical time to minimize the need for temporary controls. Cut slopes shall be permanently seeded and mulched as the excavation proceeds to the extent considered desirable and necessary to comply with the erosion control plan.

E. The temporary erosion control systems installed by the Contractor shall be maintained to control siltation at all times during the life of the Contract. The Contractor must respond to any maintenance or additional work to comply with this specification within a 48-hour period.

F. DIRTBAGS® are required for the discharge of <u>any</u> construction dewatering or pumping, and the DIRTBAG® shall be operational before any trenching.

G. Certain erosion control measures require staged restoration. For example, reinforced cuts must be completed in 5-foot vertical increments.

H. Areas of water quality filters may be used as temporary sediment sumps but must be removed and the subgrade reworked before the filter is constructed.

I. Catch basins may require an Underdrain connection below subgrade. If the crushed stone and Underdrain fabric become fouled during construction they shall be replaced.

J. Fugitive dust shall be controlled through construction.

K. Sorbent booms must be installed in the catch basin before paving. These shall be replaced prior to requesting substantial completion.

L. DirtGlue™ may be substituted to the Engineer for approval when DirtGlue™ is to be substituted for mulch, dust control, and other erosion controls of the emulsion mix, application rate, and weather condition that exist at the time of proposed installation must be approved by the Engineer.

3.3 CONSTRUCTION OF TEMPORARY EROSION CONTROL MEASURES

A. Earth Dike Construction:

1. All dikes shall be compacted by earth-moving equipment.
2. All dikes shall have positive drainage to an outlet.
3. Top width may be wider and side slopes be flatter if desired to facilitate crossing by construction traffic.

4. Field location should be adjusted as needed to utilize a stabilized safe outlet.
5. Earth dikes shall have an outlet that functions with a minimum of erosion. Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin where either the dike channel or the drainage area above the dike are not adequately stabilized.
6. Stabilization shall be (A) in accordance with standard specifications for seed and straw mulch if not in seeding season, (B) flow channel as per the chart on the previous page.

B. Temporary Swale Construction:

1. All temporary swales shall have uninterrupted positive grade to an outlet.
2. Diverted runoff from a disturbed area shall be conveyed to a sediment trapping device.
3. Diverted runoff from an undisturbed area shall outlet directly into an undisturbed stabilized area at non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the swale.
5. The swale shall be excavated or shaped to line, grade, and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fills shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the swale.
8. Stabilization shall be as per the flow channel stabilization chart below:

Type of Treatment	**Channel Grade**	**A (5 AC. or Less)**	**B (5 AC. or Less)**
1	0.5-3.0%	Seed and Straw Mulch	Seed and Straw Mulch
2	3.1-5.0%	Seed and Straw Mulch	Seed Using Jute or Excelsior
3	5.1-8.0%	Seed with Jute or Excelsior, Sod	Lined with 4-8’ Rip-Rap or Recycled Concrete Equivalent
4	8.1-20%	Lined with 4-8’ Rip-Rap	Engineered Design

9. Periodic inspection and required maintenance must be provided after each rain event.

C. Perimeter Dike/Swale Construction

1. All perimeter dike/swale shall have uninterrupted positive grade to an outlet.
2. Diverted runoff from a disturbed area shall be conveyed to a sediment trapping device.
3. Diverted runoff from an undisturbed area shall outlet into an undisturbed stabilized area at non-erosion velocity.
4. The swale shall be excavated or shaped to line grade and cross section as required to meet the criteria specified in the standard.
5. Stabilization of the area disturbed by the dike and swale shall be done in accordance with the standard and specifications for temporary seeding and mulching, and shall be done within 10 days.

6. Periodic inspection and required maintenance must be provided after each rain event.

   Max. Drainage Area Limit: 2 Acres.

D. Level Spreader Construction (Non-Metallic Without V Notch Weirs)

1. The matting should be a minimum of 4 ft. wide extending 6 inches over the lip and buried 6 inches deep in a vertical trench on the lower edge. The upper edge should butt against smoothly cut sod and be securely held in place with closely spaced heavy duty wire staples at least 12 inches in length.
2. Ensure that the lip is level to uniformly spread discharge.
3. The lip shall be constructed on undisturbed soil not fill.
4. A 20 foot transition section will be constructed from the diversion channel to the spreader to smoothly blend the different dimension and grades.
5. The runoff discharge will be outleted onto a stabilized vegetated slope not exceeding 10%.
6. Seed and mulch the disturbed area immediately after construction.

E. Level Lip Spreader

The intent of the level lip spreader is to disperse the flow along the weir and not permit the flow to concentrate. This requires the weir be set level and erosion control provided to protect the area on the downstream side of the spreader. The grades at the end of the spreaders shall be higher than the spreader and consist of a compacted material to prevent washout and bypass around the end of the weir.

In many cases the area downstream of the weir will need to be inspected to make sure there is no inadvertent or unintentional concentration of flows. Erosion control blankets, mats, or crushed stone may be necessary to proven rill erosion. Downstream areas shall be inspected with a representative of the Owner after the weir location has been established in the field, at the time of construction, and a final inspection before substantial completion is issued for the site work.

The level lip spreader shall be checked for level and observed during heavy precipitation to make sure the flow is uniform along the length of the spreader.

F. Straw Bale Dike Construction

1. Bales shall be placed at the toe of a slope or on the contour and in a row with ends tightly abutting the adjacent bales.
2. Each bale shall be embedded in the soil a minimum of (4) inches, and placed so the bindings are horizontal.
3. Bales shall be securely anchored in place by either two stakes or re-bars driven through the bale. The first stake in each bale shall be driven toward the previously laid bale at an angle to force the bales together. Stakes shall be driven flush with the bale.
4. Inspection shall be frequent and repair placement shall be made promptly as needed.
5. Bales shall be removed when they have served their usefulness so as not to block or impede storm flow or drainage.

G. Silt Fence Construction

1. Woven wire fence to be fastened securely to fence posts with wire ties or staples. Posts shall be steel either ‘T’ or ‘U’ type or hardwood.
2. Filter cloth to be fastened securely to woven wire fence with ties spaced every 24” at top and mid section. Fence shall be woven wire, 12 ½ gauge, 6” maximum mesh opening.
3. When two sections of filter cloth adjoin each other they shall be overlapped by six inches and folded. Filter cloth shall be either Filter X, Mirafi 100X, Stabilinka T140N, or approved equivalent.
4. Prefabricated units shall be Geofab, EnviroFence, or approved equivalent.
5. Maintenance shall be performed as needed and material removed when ‘bulges’ develop in the silt fence.

H. Check Dam Construction

1. Stone will be placed on a filter fabric foundation to the lines, grades and locations shown in the plan.
2. Set spacing of check dams to assume that the elevations of the crest of the downstream dam are at the same elevation of the toe of the upstream dam.
3. Extend the stone a minimum of 1.5 feet beyond the ditch banks to prevent cutting around the dam.
4. Protect the channel downstream of the lowest check dam from scour and erosion with stone or liner as appropriate.
5. Ensure that channel appurtenances such as culvert entrances below check dams are not subject to damage or blockage from displaced stone.

   Maximum drainage area 2 acres.

I. Rock Dam Construction

1. The area under the rock dam shall be cleared and stripped of roots and other objectionable material. The reservoir shall be cleared as needed to facilitate sediment removal.
2. Dimensions shown are minimum. Trench shall be excavated from abutment to abutment on the dam centerline. Filter fabric shall be placed from upstream edge of key trench to downstream edge of apron. Joints will lap a minimum of 1 ft. with upstream strip on top.
3. Construct the rock embankment to the dimensions shown on the drawing. Rock abutments shall be maintained 2 ft. above the crest.
4. The rock dam shall be constructed prior to clearing the basin area. Stabilize all disturbed areas, except the basin area, with temporary seeding.
5. Fencing and warning signs should be placed as appropriate.

   Maximum drainage area 50 acres.

J. Excavated Drop Inlet Protection Construction

1. Clear the area of all debris that will hinder excavation.
2. Grade approach to the inlet uniformly around the basin.
3. Weep holes shall be protected by gravel.
4. Upon stabilization of contributing drainage area, seal weep holes, fill basin with stable soil to final grade, compact it properly and stabilize with permanent seeding.

   Maximum drainage area 1 acre.

K. Filter Fabric Drop Inlet Protection Construction

1. Filter fabric shall have an EOS of 40-85. Burlap may be used for short term applications.
2. Cut fabric from a continuous roll to eliminate joints. If joints are needed they will be overlapped to the next stake.
3. Stake materials will be standard 2’ x 4’ wood or equivalent. Metal with a minimum length of 3 feet.
4. Space stakes evenly around inlet 3 feet apart and drive a minimum 18 inches deep. Spans greater than 3 feet may be bridged with the use of wire mesh behind the filter fabric for support.
5. Fabric shall be embedded 1 foot minimum below ground and backfilled. It shall be securely fastened to the stakes and frame.
6. A 2’ x 4’ wood frame shall be completed around the crest of the fabric for over flow stability.

   Maximum drainage area 1 acre.

L. Stone and Block Drop Inlet Protection Construction

1. Lay one block on each side of the structure on its side for dewatering. Foundation shall be 2 inches minimum below rest of inlet and blocks shall be placed against inlet for support.
2. Hardware cloth or ½” wire mesh shall be placed over block openings to support stone.
3. Use clean stone or gravel ½ - ¾ inch in diameter placed 2 inches below top of the block on a 2:1 slope or flatter.
4. For stone structures only, a 1 foot thick layer of the filter stone will be placed against the 3 inch stone as shown on the drawings.

   Maximum drainage area 1 acre.

M. Curb Drop Inlet Protection Construction

1. Filter fabric shall have an EOS of 40-85.
2. Wooden frame shall be constructed of 2’ x 4’ construction grade lumber.
3. Wire mesh across throat shall be a continuous piece 30 inch minimum width with a length 4 feet longer than the throat. It shall be shaped and securely nailed to a 2’ x 4’ weir.

4. The weir shall be securely nailed to 2’ x 4’ spacers 9 inches long spaced no more than 6 feet apart.
5. The assembly shall be placed against the inlet and secured by 2’ x 4’ anchors 2 feet long extending across the top of the inlet and held in place by sandbags or alternate weights.

   Maximum drainage area 1 acre.

N. Pipe Outlet Sediment Trap Construction

1. Area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots or other woody vegetation as well as over-sized stones, rocks, organic material, or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
3. Volume of sediment storage shall be 3600 cubic feet per acre of contributory drainage.
4. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to ½ the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
5. The structure shall be inspected after each rain and repairs made as needed.
6. Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.
7. The structure shall be removed and area stabilized when the drainage area has been properly stabilized.
8. All fill slopes shall be 2:1 or flatter, cut slopes 1:1 or flatter.
9. All pipe connections shall be watertight.
10. The top 2/3 of the riser shall be perforated with one (1) inch diameter holes or slits spaced six (6) inches vertically and horizontally and placed in the concave portion of pipe. No holes will be allowed within six (6) inches of the horizontal barrel.
11. The riser shall be wrapped with ¼ to ½ inch hardware cloth wire then wrapped with filter cloth (having an equivalent sieve size of 40-80). The filter cloth shall extend six (6) inches above the highest hole and six (6) inches below the lowest hole. Where ends of the filter cloth come together, they shall be over-lapped, folded and stapled to prevent bypass.
12. Straps or connecting bands shall be used to hold the filter cloth and wire fabric in place. They shall be placed at the top and bottom of the cloth.
13. Fill material around the pipe spillway shall be hand compacted in four (4) inch layers. A minimum of two (2) feet of hand compacted backfill shall be placed over the pipe spillway before crossing it with construction equipment.
14. The riser shall be anchored with either a concrete base or steel plate base to prevent flotation. For concrete based the depth shall be twelve (12) inches with the riser embedded nine (9) inches. A ¼ inch minimum thickness steel plate shall be attached to the riser by a continuous weld around the bottom to form a watertight connection and then place two (2) feet of stone, gravel, or tamped earth on the plate.

O. Grass Outlet Sediment Trap Construction

1. Volume of sediment storage shall be 3,600 cubic feet per acre of contributory drainage area.
2. Minimum crest width shall be 4x drainage area.
3. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to ½ the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
4. The structure shall be inspected after each rain and repairs made as needed.
5. Construction operations shall be carried out in such a manner that erosion and water pollution shall be minimized.
6. The sediment trap shall be removed and area stabilized when the remaining drainage drainage area has been properly stabilized.
7. All cut slopes shall be 1:1 or flatter.

   Maximum drainage area 5 acres.

P. Catch Basin Sediment Trap Construction

1. Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to ½ the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
2. The volume of sediment storage shall be 3600 cubic feet per acre of contributory drainage.
3. The structure shall be inspected after each rain and repairs made as needed.
4. Construction operations shall be carried out in such a manner that erosion and water pollution shall be minimized.
5. The sediment trap shall be removed and the area stabilized when the constructed drainage area has been properly stabilized.
6. All cut slopes shall be 1:1 or flatter.

   Maximum drainage area 3 acres.

Q. Stone Outlet Sediment Trap Construction

1. Area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots and other woody vegetation as well as over-sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
3. All cut and fill slopes shall be 2:1 or flatter.
4. The stone used in the outlet shall be small riprap 4”-8” along with a 1’ thickness of 2’ aggregate placed on the upgrade side on the small riprap or embedded filter cloth in the riprap.
5. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to ½ the design depth of the trap.

6. The structure shall be inspected after each rain and repairs made as needed.
7. Construction operations shall be carried out in such a manner that erosion and water pollution is minimized.
8. The structure shall be removed and the area stabilized when the drainage area has been properly stabilized.

   Maximum drainage area 5 acres.

R. Riprap Outlet Sediment Traps Construction

1. The area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots or other woody vegetation as well as over-sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed. Maximum height of embankment shall be five (5) feet, measured at centerline of embankment.
3. All fill slopes shall be 2:1 or flatter, cut slopes 1:1 or flatter.
4. Elevation of the top of any dike directing water into trap must equal or exceed the height of embankment.
5. Storage area provided shall be figured by computing the volume available behind the outlet channel up to an elevation of one (1) foot below the level weir crest.
6. Filter cloth shall be placed over the bottom and sides of the outlet channel prior to placement of stone. Sections of fabric must overlap at least one (1) foot with section nearest the entrance placed on top. Fabric shall be embedded at least six (6) inches into existing ground at entrance outlet channel.
7. Stone used in the outlet channel shall be four (4) to eight (8) inch riprap to provide a filtering effect. A layer of filter cloth shall be embedded one (1) foot with section nearest entrance placed on top. Fabric shall be embedded at least six (6) inches into existing ground at entrance of outlet channel.
8. Sediment shall be removed and trap restored to its original dimensions when sediment has accumulated to ½ the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
9. The structure shall be inspected after each rain and repaired as needed.
10. Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.
11. The structure shall be removed and the area stabilized when drainage area has been properly stabilized.
12. Drainage area for this practice is limited to 15 acres or less.

S. Portable Sediment Tank Construction

1. Clean out the sediment tank when one third (1/3) filled with silt.
2. Steel drums are used as an example due to their ready availability. Any tanks may be used, providing that the volume requirements are met.
3. All sediment collected in the tank shall be disposed of in a sediment trapping device or as approved by the inspector.

T. Stabilized Construction Entrance

1. Stone Size – Use 2” stone, or reclaimed or recycled concrete equivalent.
2. Length – Not less than 50 feet (except on a single residence lot where a 30 foot minimum length would apply).
3. Thickness – Not less than six (6) inches.
4. Width – Twelve (12) foot minimum, but not less than the full width at points where ingress or egress occurs. Twenty-four (24) foot if single entrance to site.
5. Filter Cloth – Will be placed over the entire area prior to placing of stone.
6. Surface Water – All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted.
7. Maintenance – The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way, all sediment spilled, dropped, washed or tracted onto public rights-of-way must be removed immediately.
8. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
9. Periodic inspection and needed maintenance shall be provided after each rain.

U. Sump Pit Construction

1. Pit dimensions are optional.
2. The standpipe should be constructed by perforating a 12-24” diameter corrugated or PVC pipe.
3. A base of 2” aggregate should be placed in the pit to a depth of 12” after installing the standpipe, the pit surrounding the standpipe should be backfilled with 2” aggregate.
4. The standpipe should extend 12-18” above the lip of the pit.
5. If discharge will be pumped directly to a storm drainage system, the standpipe should be wrapped with filtercloth before installation. If desired, ¼” – ½” hardware cloth may be placed around the standpipe, prior to attaching the filtercloth.

3.4 MULCH ANCHORING REQUIREMENTS

Anchoring Method or Material	**Kind of Mulch to be Anchored**	**How to Apply**
1. Peg and Twine	Hay or straw	After mulching, divid areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2” to 3” of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine.
2. Mulch Netting	Hall or straw	Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer’s recommendations. Should be biodegradable. Most products are not suitable for foot traffic.
3. Wood Cellulose Fiber	Hay or Straw	Apply with hydroseeder immediately after mulching. Use 500 lbs. Wood fiber per acre. Some products contain an adhesive material, possible advantageous.
4. Mulch Anchoring Tool	Hay or Straw	Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be “tucked” into soil surface about 3”.
5. Chemical	Hay or Straw	Apply Terra Tack AR 120 lbs./ac. in 480 gal. of water (#156/ac.) or Aerospray 70 (60 gal/ac.) according to manufacturer’s instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45º Fahrenheit are required.

END OF SECTION 312513

STORMWATER POLLUTION PREVENTION PLAN

STORM WATER POLLUTION PREVENTION PLAN
MODIFICATION REPORT

midtown
PORTLAND, MAINE

CHANGES REQUIRED FOR STORM WATER POLLUTION PREVENTION PLAN

The SWPPP must be amended whenever there is a change in design, construction, operation, or maintenance at the construction site that has a significant effect on the discharge of pollutants to the waters of the United States that has not been previously addressed in the SWPPP, if inspections or investigations by site staff, local, state or federal officials determine that discharges are causing water quality exceedances or the SWPPP is ineffective in eliminating or significantly minimizing pollutants in storm water discharges from the construction site, or based on the results of an inspection, or there is a release containing a Hazardous Substance or Oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302 occurs during a 24 hour period, the SWPPP must be modified to include additional or modified BMPs designed to correct identified problems. Revisions to the SWPPP must be completed within seven (7) calendar days following the inspection. Modifications that are the result of inspections shall be initialed within 24 hours and completed within 48 hours. All modifications are to be referenced on both Form D-1 and on Progress Drawing.

To:	**Project Manager**	**Date:**	
Address:			
		Project Name:	
Telephone:			
Facsimile:			
Sent Via:	☐ **Facsimile**	☐ **Courier**	☐ **US Mail**

MODIFICATION DATE: ________________________ MODIFICATION NUMBER: _____________

INSPECTOR: ________________________________ (Print Name)

________________________________ (Inspector Signature)

QUALIFICATIONS OF INSPECTOR: ____

CHANGES REQUIRED TO THE STORMWATER POLLUTION PREVENTION PLAN: ________________________

____

____

REASONS FOR CHANGES: ____

____

____

TO BE PERFORMED BY: ______________________ ON OR BEFORE: _____________________

Operator: ____

Approved by Owner: ___________________________________

STORM WATER POLLUTION PREVENTION PLAN

TRAINING LOG

(The Contractor shall provide training sessions at least every 30 days per Section 801(K))

midtown
PORTLAND, MAINE

Storm Water Pollution Prevention Plan Topic: (Check as appropriate, and attach agenda)

☐ **Temporary Soil Stabilization**

☐ **Wind Erosion Control**

☐ **Non-Storm Water Management**

☐ **Erosion & Sediment Control Plan**

☐ **Temporary Sediment Control**

☐ **Tracking Control**

☐ **Waste Management and Materials Pollution Control**

Specific Training Objective: ____

Date: ____

Instructor: ____
Location: ____
Telephone: ____

Attendance Roster

Name	Company	Telephone Number	Signature

Operator: ____

Approved by Owner: __________________________________

STORM WATER POLLUTION PREVENTION PLAN

FINAL STABILIZATION CERTIFICATION /NOTICE OF TERMINATION CHECKLIST

midtown
PORTLAND, MAINE

☐ **All soil disturbing activities are complete.**

2. ☐ **Temporary Erosion and Sediment Control Measures have been removed or will be removed at the appropriate time.**

3. ☐ **All areas of the Construction Site not otherwise covered by a permanent pavement or structure have been stabilized with a uniform perennial vegetative cover with a density of 90% or equivalent measures have been employed.**

CONTRACTOR'S CERTIFICATION: ***[modify the following statement to be consistent with that on the Notice of Termination for the permitting agency]***

> ***"I certify under penalty of law that all storm water discharges associated with Construction Activity from the identified project that are authorized by the NPDES Construction General Permit have been eliminated and that all disturbed areas and soils at the construction site have achieved Final Stabilization and all temporary erosion and sediment control measures have been removed or will be removed at the appropriate time."***

Company Name ______________________________

Name (Print) ______________________________

Signature ______________________________

Title ______________________________

Date ______________________________

Date: ______________________________

Received by: ______________________________
[Name]

STORM WATER POLLUTION PREVENTION PLAN
REPORTABLE QUANTITY RELEASE FORM

midtown
PORTLAND, MAINE

The discharges of Hazardous Substances or Oil in storm water discharges from construction sites must be prevented or minimized in accordance with the SWPPP. Where a release containing a Hazardous Substance or Oil in an amount equal to or in excess of a reportable quantity established under 40CFR Part 110, 40CFR Part 117 and 40CFR Part 302 occurs, the following steps must be taken:

1. All measures must be taken to contain and abate the spill and to prevent the discharge of Hazardous Substances or Oil to storm water or off-site.

2. Contact the Owner or Operator's Engineer immediately upon knowledge of release.

3. If a release is equal to or in excess of a reportable quantity, the SWPPP must be modified within seven (7) calendar days of knowledge of the discharge to provide a description of the release, the circumstances leading to the release, and the date of the release. The plans must identify measures to prevent the recurrence of such releases and to respond to such releases.

Date of Spill	Material Spilled	Approximate Quantity of Spill (in gallons)	Agency(s) Notified	Date of Notification	SWPPP Revision Date

YEAR 20___

midtown
PORTLAND, MAINE
STORM WATER POLLUTION PREVENTION PLAN
PROJECT RAINFALL LOG

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Day												
1												
2												
3												
4												
5												
6												
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31												
PM Initials												

STORM WATER POLLUTION PREVENTION PLAN

CONSTRUCTION SITE NOTICE

The following information is posted in compliance with the Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP)

Information must be typed

Contact Name and Phone Number:	
Brief Project Description:	**[Reference Section 804 of the SWPPP]:**
Location of Storm Water Pollution Prevention Plan (SWPPP):	

A Storm Water Pollution Prevention Plan (SWPPP) has been developed and implemented according to Permit requirements. A full copy of the SWPPP for this construction project can be found at the location identified above.

This permit does not provide the public with any right to trespass on a construction site for any reason, including inspection of a site; nor does this permit require that permittees allow members of the public access to a construction site.

***This notice must be posted conspicuously at the main entrance of the construction site and inside the job trailer and shall also include the NPDES Permit Number for the Project or a "completed" copy of the Notice of Intent (NOI) or other form of request required to obtain coverage under the applicable storm water permit if a number has not yet been assigned. The notice of Coverage (NOC) [or other State or local Jurisdiction approval notice] notifying the applicant that coverage under the applicable permit has been obtained must also be posted, once received. This notice must be updated whenever information related to the contact person has changed or the location of the SWPPP has changed.**

STORM WATER POLLUTION PREVENTION PLAN
PRE-CONSTRUCTION MEETING TRAINING AGENDA

midtown
PORTLAND, MAINE

Topic	Discussed	Further action or Information Required (Yes or No)
Overview of NPDES Permit Program – Owner's Expectations/Contract Provisions		
General Discussion of SWPPP and Records Retention Requirements		
Phasing of Project		
Review of Erosion and Sediment Control Plans (to include all temporary and permanent structural and stabilization measures)		
Locating waste containers, portable toilets, concrete washout areas, fueling areas and tank storage area on designated Erosion and Sediment Control Plans		
Posting Erosion and Sediment Control Plan(s) at job trailer		
Posting requirements for the Notice of Intent (NOI), Notice of Coverage (NOC) and Construction Site Notice (Form I-1)		
Allowable non-storm water discharges and handling procedures		
Materials management to include proper material storage, etc.		
General Contractor's Certification Form		
Subcontractor's Certification Form		
Inspection form and required inspection timeframe		
Stabilization schedule		
Implementation schedule		
Modification report and modifying plans		
Contractor/Subcontractor training		
Final stabilization		
Reportable quantity release procedures		
Rainfall logs		
State specific requirements		
Import/Export – Fill and Spoil Materials		

<u>Attendance Roster</u> **Date: ______________**

Name	Company	Telephone Number	Signature

Name	**Company**	**Telephone Number**	**Signature**

Items which require further action or additional information: ____
____
____

Additional items discussed (not addressed above): ____
____
____

*This completed form is to be included in both the Project Manager’s and Construction Site SWPPP Ledger.

ATTACHMENT D

DirtGlue™ Application and Use Requirements

DIRTGLUE™
APPLICATION INSTRUCTIONS FOR DUST CONTROL

METHODOLOGY

A. Heavy Duty Driving Surface

Application Rates (per surface area):

DirtGlue™ polymer emulsion:	2,400 gallons
Water:	3,600 -14,400 gallons

Application Process:

1. Loosen the existing soil using a scarifying attachment mounted on a grader (or similar piece of equipment) or a tractor with an agriculture disk attachment. If additional soil is required, it should be applied and mixed into the existing soil at this time. It is important to loosen the soil to ensure penetration of the DirtGlue™/water mixture into the soil.

2. Apply DirtGlue™/water mixture to soil using a water truck equipped with a gravity feed drip bar, spray bar, or automated distributor truck. Multiple passes will be necessary to get the desired amount of DirtGlue™ polymer emulsion for the specific application. Multiple passes will also ensure gradual, thorough saturation of the soil.

3. Thoroughly blend the DirtGlue™/water mixture into the soil with a rototiller, "S" harrow, or similar attachment. The soil must be evenly mixed and saturated with the DirtGlue™/water mixture to a depth of four (4") inches.

4. Grade the soil to finish grade with a grader, a small dozer or other suitable equipment.

5. Compact the soil with a vibratory roller. The final compaction should be greater than asphalt (Strive for 100% compaction, but always in excess of 95%).

6. Immediately after compacting, apply a topcoat of DirtGlue™ polymer emulsion to seal the road surface. In order to ensure a longer life and superior performance of the application, an additional coat should be applied between twenty four to forty eight hours after completion and then annually as an ongoing maintenance procedure. This topcoat should be applied at a rate of 250 gallons per surface acre.

B. Temporary Light Duty Driving Surface

This type of application will provide acceptable performance when used by cars and light trucks. It is not intended for constant use by heavy-duty trucks and/or tracked construction equipment. Areas that will be used by this type of equipment should be treated as a heavy-duty application as noted above.

Application Rates (per surface acre):

DirtGlue™ polymer emulsion:	1,200 gallons
Water:	3,600-6000 gallons

Application Process:

1. Loosen the existing soil for a depth of two (2") inches using a scarifying attachment mounted on a grader (or similar piece of equipment) or a tractor with a rototiller or agriculture disk attachment. If additional soil is required, it should be applied and mixed into the existing soil at this time. It is important to loosen the soil to ensure penetration of the **DirtGlue™/**water mixture into the soil.

2. Apply **DirtGlue™**/water mixture to soil using a water truck equipped with gravity feed drip bar, spray bar, or automated distributor truck. Multiple passes will be necessary to get the desired amount of **DirtGlue™** polymer emulsion for the specific application. Multiple passes will also ensure gradual, thorough saturation of the soil. Do not apply the **DirtGlue™/**water mixture so heavy as to create run-off.

3. Grade the soil to finish grade with a grader, a small dozer or other suitable equipment.

4. Compact with a vibratory roller. The final compaction should be greater than asphalt (Strive for 100% compaction, but always in excess of 95%).

5. Immediately after compacting, apply a topcoat of **DirtGlue™** polymer emulsion to seal the road surface. In order to ensure a longer life and superior performance of the application, an additional coat should be applied between twenty four to forty eight hours after completion and then again annually as an ongoing maintenance procedure.

C. Dust & Erosion Control (Non-driving Areas)

This type of application is intended for pedestrian use only. Vehicular use will break through the skin and adversely affect the performance of the application. Areas that will require any vehicular use should be treated as a light-duty application as noted above or retreated as traffic damage occurs.

Application Rates (per surface acre):

DirtGlue™ polymer emulsion:	300 gallons (windblown dust control)
	600 gallons (bank stabilization, erosion/silt, run-off control)
Water:	2,000-6,000 gallons

Application Process

1. Apply *DirtGlue*™/water mixture to existing soil using a water truck equipped with a gravity feed spray bar or tank and pump (i.e. hydro seeder).

2. Add *DirtGlue*™ to water rather than water to *DirtGlue*™ or place a fill hose at bottom of tank, underneath surface of liquid to prevent foaming.

3. When applying *DirtGlue*™/water mixture, dispense large droplets. Avoid any fine mist. <u>The intent is to apply a sheet of liquid onto the soil</u>.

4. It is important to determine the moisture content of the soil prior to starting an application. The moisture content will have an effect on the dilution ratio of the *DirtGlue*™/water mixture. Your *DirtGlue*™ representative will assist you in determining the correct dilution ratio for the conditions on your site.

5. Temperature and, to a lesser extent, humidity have a significant effect on curing/drying time. Testing has shown that applications should be done only when the air temperature will be above 50° F for at least 72 hours following the application. Soil temperature must be above 40° F for several days.

6. The *DirtGlue*™ application must be protected from the rain until the curing process has formed a skin on the surface. Uncured *DirtGlue*™ is water soluble. If the application is exposed to rain before it has the opportunity to cure, the rainwater will dilute the polymer and wash it out of the soil. If this happens, the application will not be as strong.

CONDITIONS FOR USE OF DIRTGLUE™ (REGISTERED TRADEMARK OF DIRTGLUE™ ENTERPRISES)
APPROVED MATERIALS LIST

Applicant: DirtGlue™ Enterprises

General Conditions

1. DirtGlue™ Enterprises shall ensure that every applicator of DirtGlue™™ is provided a copy of these conditions.

2. These Conditions do not override the need for any applicator to obtain permits (including DEP permits) or approvals that may be required (e.g., use associated with activities in or near regulated wetlands, surface waters, or other regulated natural resources).

3. DirtGlue™ shall only be used as stated in these conditions and shall not be mixed with any other chemicals, including petroleum products.

4. No application shall be conducted when the National Weather Service forecasts greater than 25% probability of precipitation in the application area to occur within 24 hours, or the temperature will drop below 35° F anytime within 24 hours after the application.

5. Applications shall not be conducted when the ground is saturated (due to precipitation or wetting) as defined by visible pools of water at or in the vicinity of the application, in order to prevent movement of DirtGlue™ beyond the shoulder of the road.

6. DirtGlue™ must not be applied or handled in a manner that could result in spillage or application within 100 feet of a wetland regulated by New York State, or 50 feet of all other water bodies and bridges.

7. Any spill which could enter the waters of the state shall be reported to the DEC Spills Hotline within two hours (1-800-457-7362). Any required response (including any needed cleanup) in addition to that being conducted shall then be determined by the DEC regional office.

8. The time of application shall be chosen to take meteorological conditions into account, to avoid significant potential airborne or odor impacts.

9. Prior to application, DirtGlue™ Material Safety Data Sheet shall be provided to applicators and others who would come in proximity or contact with the material.

ATTACHMENT E

Special Treatment Procedures for Groundwater
Prepared by City of Portland
Environmental Consultant

ATTACHMENT E
DRAFT DEWATERING SPECIFICATION

SECTION 02240 – DEWATERING

PART 1 - GENERAL

1.01 Description of Work

A. Provide, install, and maintain all necessary material and equipment used to keep excavation free of standing or flowing water and to transport water to a suitable discharge point.

B. Provide measures to store water in accordance with all local, state and federal regulations. Notify the City of Portland Environmental Engineering Department prior to conduction dewatering operations. Provide treatment as specified in Attachment G of the Erosion Sediment Control Report.

C. Related Work elsewhere includes:

Earthmoving:	Section 312000
Erosion Control:	Section 312513
Water System Distribution:	Section 331100
Sanitary Sewer:	Section 333100
Stormwater Treatment Systems:	Section 334419.20

1.02 Submittals

A. At least 2 weeks prior to the start of construction in any areas of anticipated dewatering, submit to the Engineer and City of Portland Environmental Engineering Department, a written plan for removal, storage, treatment, and discharge of groundwater from excavations. Do not proceed with construction in any of these areas until the plan has been reviewed and approved by the Engineer and City of Portland Environmental Engineering Department.

PART 2 – PRODUCTS (not applicable)

PART 3 – EXECUTION

3.01 General:

A. Only trained personnel are authorized to conduct dewatering, storage, and discharge operations.

3.02 Dewatering Excavations:

A. Perform all work in the dry. Prevent surface water or groundwater from flowing into excavations and from flooding project site and surrounding area. Do not allow water to accumulate in excavations.

B. Provide and maintain pumps, well points, sumps, hoses, filters, and all other dewatering system components necessary to convey water away from excavations.

C. Minimize the suspended solids content in the water by lining the excavation collection area with crushed stone and placing the pump intake in a perforated bucket.

D. Convey water removed from excavations to a frac tank. Do not use trench excavations as temporary drainage ditches. Do not allow silt laden water to discharge to gutters or storm drainage system. Do not discharge water directly to the storm or sanitary sewer.

E. Any damages to existing facilities or new work resulting from the failure of the Contractor to maintain the work areas in a dry condition shall be repaired by the Contractor, as directed by the Engineer, at no additional expense to the Owner. Pumping shall be continuous where specified or directed or as necessary to protect the work and to maintain satisfactory progress.

3.03 Storage/Treatment/Discharge Process:

A. Water removed from excavations shall be stored in a frac tank to allow settling of solids and testing prior to treatment. The dewatering pump line shall be placed at the opposite end from the tank outlet.

B. Limit circulating tank contents to prevent freezing. Do not discharge from the tank while the circulation pump is operating to allow adequate settling time before discharge.

C. If needed for additional storage and treatment volume, provide a second tank to be placed in series for secondary settlement. Transfer the water from the first tank to the second tank by suspending the intake line immediately below the water level to minimize disturbance of sediment at the bottom of the tank.

D. Prior to discharge of each tank load, collect a water sample for laboratory analysis for Total Petroleum Hydrocarbons (TPH) by EPA Method 8015. Provide test results to the Engineer and City of Portland Environmental Engineering Department. Provide access to the tanks for the City of Portland Environmental Engineering Department to take independent water samples. Do not add water or other materials to the frac tank after collecting the water sample.

E. Follow direction provided by the City of Portland Environmental Engineering Department on further testing and disposal requirements.

F. Obtain all local, state, and federal approvals necessary for the discharge of the water. If water is discharged to the sanitary sewer, bag filters must be installed on the discharge piping and water must meet the Portland POTW discharge limitations.

3.04 Diversion of Water

A. The Contractor shall be responsible for providing and maintaining all ditching, grading, sheeting, and bracing, pumping and appurtenant work for the protection from flooding as necessary to permit the construction of work in the dry.

B. Upon completion of the contract work, the Contractor shall remove all temporary construction and shall do all necessary earthwork and grading to restore the areas disturbed to their original condition or to such other conditions as indicated or directed by the Owner.

C. Water shall not be permitted to flow into or through excavations in which work is under way or has been partially completed. The Contractor shall not restrict or close off the natural flow of water in such a way that ponding or flooding will occur, and shall at all times prevent flooding of public and private property. All damages resulting from flooding or restriction of flows shall be the sole responsibility of the Contractor, at no additional expense to the Owner.

End of Section 02240

<u>ATTACHMENT F</u>

Draft Specification for Groundwater Treatment System

DRAFT

GENERAL CONDITIONS APPLICABLE TO ALL DISCHARGES TO TREATMENT OF GROUNDWATER PUMPED FROM ONSITE EXCAVATION WITH DISCHARGE OPTIONS

---

1. Advance notice shall be given to the City of Portland of any planned operation of the groundwater treatment facility or activity which may result in noncompliance with effluent limitations. The City will determine whether the discharge should be to the storm drain or sanitary sewer.

2. Any noncompliance which may endanger health or the environment must be reported orally within 24 hours from the time City of Portland becomes aware of the circumstances. A written report shall also be provided within 5 days. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if it has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate and prevent the noncompliance and its recurrence.

3. Wastewater Discharge Limits: Wastewater discharges are classified according to the discharge point i.e. surface water, or publicly-owned treatment works (POTW). The discharge limits are standardized according to these discharge points (surface water or POTW), regardless of the technology being used to treat the wastewater, and regardless of the quality of the receiving stream. Discharges to the storm drain shall not exceed drinking water standard by over 50%. Discharges to the POTW must be authorized by the City of Portland and the Portland Water District using applicable industrial pretreatment protocol.

   A surface water discharge is a wastewater stream which enters a surface water, a lined drainage ditch leading to a surface water, or a portion of the City of Portland's separated storm sewer.

   A discharge to a POTW is a wastewater stream which enters a municipal sewage treatment plant by connection to a pipeline, or is otherwise transported to the treatment plant. The POTW determines the limits appropriate for each wastewater stream according to the operational capacities of the treatment plant.

   The Contractor also has the option to containerize the groundwater and transport it to an approved disposal area provided documentation of the facilities approved and certified bills of laden are provided to the Owner with a copy to the City of Portland.

EXHIBIT 15

HALEY & ALDRICH GEOTECHNICAL INFORMATION

GEOTECHNICAL DATA REPORT
midtown DEVELOPMENT
SOMERSET STREET
PORTLAND, MAINE

by

Haley & Aldrich, Inc.
Portland, Maine

for

The Federated Companies
Miami, Florida

File No. 38354-000
13 November 2014

Haley & Aldrich, Inc.
75 Washington Avenue
Suite 203
Portland, ME 04101

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HaleyAldrich.com

HALEY&
ALDRICH

13 November 2014
File No. 38354-000

The Federated Companies
3301 NE 1st Avenue, Suite M-302
Miami, Florida 33137

Attention: Nick Wexler
Chief Operating Officer

Subject: Geotechnical Data Report
midtown Development
Somerset Street
Portland, Maine

Ladies and Gentlemen:

This geotechnical data report (GDR) presents the results of previously completed subsurface investigation and laboratory test programs conducted within the proposed midtown Development area, which is located along the portion of Somerset Street between Elm Street and Pearl Street, in Portland, Maine. This work was completed in accordance with our proposal, dated 15 October 2012, and your subsequent authorization.

Please recall that as originally envisioned the midtown Development was to be completed (designed and constructed) in multiple phases. Under this original development scenario we previously submitted a GDR for what was at the time (May 2013) Phase I (Phase I GDR), which included proposed structures on the parcel(s) of land between Chestnut Street and Pearl Street. The Phase I GDR was prepared in support of Fay, Spofford & Thorndike's (FSTs) Level III Site Plan Application submission to the City of Portland (City).

Based on our recent discussions with you and FST, we understand that since the submission of the original Phase I GDR the project has been modified and will be developed (designed and constructed) in a single phase. As a result, a modification of the Level III Site Plan Application to the City is required and FST has requested that we revise and resubmit the GDR to include additional subsurface information on the parcel of land between Elm Street and Chestnut Street. The ultimate goal is to have a GDR that reflects the current scope and phasing of the proposed midtown Development.

We appreciate the opportunity to help support The Federated Companies (TFC) on this significant and challenging project, and we look forward to providing continued assistance to you during subsequent phases of the project.

ELEVATION DATUM

Elevations referenced herein are in feet and reference Portland City Datum (PCD). Portland City Datum relates to tidal datum at the site as follows:

MHHW = El. 5.4
MLLW = El. -4.5

Please note that this tidal information is site specific and is taken from National Oceanic Atmospheric Administration (NOAA) tidal station No. 8418150 located on the Maine State Pier, Portland, Maine. This is the NOAA tidal station closest to the site.

SITE LOCATION, EXISTING CONDITIONS & PREVIOUS USE

The proposed midtown Development area is located in the Bayside region of Portland as shown on Figure 1, Project Locus. This portion of the Back Cove area, including the site, once consisted of tidal mudflats (see 1886 Sanborn Maps for area in Appendix E) and was filled with demolition debris (brick, concrete, rock fragments and wood), refuse, ash and soil during the 18th, 19th and 20th centuries, a great portion of which was generated by the Great Portland Fire of 1866. Historical Sanborn Maps of the site are provided for reference in Appendix E.

More specifically, the midtown Development site consists of two parcels that are separated by Chestnut Street. The southern parcel is bound by Elm Street to the south, Somerset Street to the east, Chestnut Street to the north and the Portland Trails pedestrian walkway and commercial properties to the west. The northern parcel is bound by Chestnut Street to the south, Somerset Street to the east, future Pearl Street Extension to the north and the Portland Trails pedestrian walkway and commercial properties to the west (see Figures 2 and 3, Site and Subsurface Exploration Location Plans). Ground surface elevations across the southern parcel vary from approximately El. 12 along the western boundary (Portland Trails pedestrian walkway) to approximately El. 8 along Somerset Street. The northern parcel is generally flat with existing ground surface elevations varying from approximately El. 8 to El. 10. One localized depression (bottom at approximately El. 6.5) is present near the northern end of the parcel.

PROPOSED SITE DEVELOPMENT

Based on our recent discussions with you and FST, we understand that current development plans call for an urban infill mixed-use development (midtown Development) on a 3.25-acre parcel of land located in the Bayside Area of Portland. The parcel has been subdivided into seven lots, which will be developed in one phase. We understand that the midtown Development will consist of four structures, designated midtownOne through midtownFour (midtownOne and midtownTwo on the northern parcel and midtownThree and midtownFour on the southern parcel). We also understand that midtownOne, midtownThree and midtownFour will consist of 6-story residential structures with one level (ground floor) of retail space. midtownTwo will consist of a 7-story parking garage with one level (ground floor) of retail space. Below grade space is not currently being considered for any of the proposed structures. The proposed building footprints for each structure are shown on Figures 2 and 3.

SUBSURFACE EXPLORATIONS

Multiple subsurface exploration programs have been completed in and around the midtown Development site. Explorations, consisting of test pits and test borings were excavated/drilled by Tewhey Associates in 1998 for the Portland Brownfield's project and by Haley & Aldrich for the Phase II Environmental Site Assessment (ESA) completed in 2000 on the former Union Branch Rail Line, respectively. In addition, test borings were also drilled by Haley & Aldrich in 2006 and 2008 for the proposed Bayside Parking Garage and Master Planning Study (northern parcel; midtownOne and midtownTwo) and the proposed MaineHealth and United Way Development (southern parcel; midtownThree and midtownFour). More recently, Haley & Aldrich also completed a series of test borings along and within Somerset Street in 2013 as part of the proposed Somerset Street improvements project.

The plan locations of the test pits and test borings are shown on Figures 2 (northern parcel; midtownOne and midtownTwo) and 3 (southern parcel; midtownThree and midtownFour), Site and Subsurface Exploration Location Plans. Logs detailing subsurface soil, rock and groundwater conditions encountered in the subsurface explorations (test pits and test borings) are provided in Appendix A. Each exploration program is discussed separately, in the following sections of this report.

Portland Brownfield's Project Test Pits (1998)

A total of ten test pits, designated TP-1 through TP-10, were excavated as part of the Portland Brownfield's project. Of these explorations, only TP-1 through TP-7 and TP-10 were excavated within the vicinity of the proposed midtown Development area and are discussed herein. The test pits were excavated by Commercial Paving & Recycling of Scarborough, Maine in October 1998 under the direction of Tewhey Associates and extended to depths ranging from approximately 6 to 14 ft below ground surface (BGS).

Phase II ESA Test Pits and Test Borings (2000)

A total of fifteen test borings, designated B101 through B115, and twenty-six test pits, designated TP101 through TP125 (including TP102A and TP102B), were drilled/excavated for the Phase II ESA. Of these explorations, only test borings B110-B112 and test pits TP101-TP108 and TP114-TP125 were completed within the vicinity of the proposed midtown Development area. Only these explorations are discussed herein.

The test pits were excavated by Environmental Projects, Inc. of Gray, Maine under the direction of Haley & Aldrich in November 2000. The test pits were excavated to depths ranging from approximately 3.5 to 12.5 ft BGS using a Komatsu tracked excavator.

The test borings were drilled by Maine Test Borings, Inc. of Brewer, Maine under the direction of Haley & Aldrich and were advanced to approximately 12 BGS using a Mobile Drill B-47 track mounted drill rig. Test borings were advanced using 4.25-in. ID hollow stem augers. All soil samples were collected continuously through fill soils and into naturally deposited soils by driving a 1 3/8-in. ID split-spoon sampler with a 140-lb hammer dropped from a height of 30 in., as indicated on the test boring logs. The number of hammer blows required to advance the sampler through each 6 in. interval was recorded and is provided on the test boring logs. The Standard Penetration Test (SPT) N-value is defined as the total number of blows required to advance the sampler through the middle 12 in. of the 24-in. sampling interval.

Observation wells were installed in completed boreholes B110-B112 for the purposes of groundwater sampling and analytical testing. Static water levels within the observation wells were not measured.

Bayside Parking Garage and Master Planning Test Borings (2006)

Eleven test borings, designated HA06-1 through HA06-11, were drilled in association with the proposed Bayside Parking Garage and Master Planning project. Only test borings HA06-1 through HA06-9 were drilled in the vicinity of the proposed midtown Development area and are discussed herein.

The test borings were drilled by Maine Test Borings of Hermon, Maine under the direction of Haley & Aldrich in August 2006 using a trailer-mounted Mobile Drill B-47 drill rig. Test borings were drilled to depths ranging from approximately 41 to 67 ft BGS using 3.0-in. (NW-size) and 4.0-in. (HW-size) ID steel casing. Soil samples were collected at standard, 5-ft intervals using the methodology described in the previous sections.

Test borings HA06-1 and HA06-4 were advanced approximately 14 to 23 ft into bedrock using a 2.0-in. (NQ-size) ID diamond-tipped core barrel.

In-situ vane shear tests were conducted within the marine (clay) deposit in each test boring with the exception of test boring HA06-8. Vane shear tests were performed to provide information on the undrained shear strength and compressibility characteristics of the marine clay at the site. Results of the vane shear testing are summarized in Table II and are provided on the test boring logs in Appendix A.

A single observation well was installed in completed borehole HA06-2 to provide information on the static groundwater level at the site. The observation well consisted of 2-in. ID, machine-slotted PVC pipe and solid PVC riser pipe extending approximately 3 ft above existing ground surface. The observation well was outfitted with a steel guardpipe and steel lock/cap assembly.

Observation well installation and groundwater monitoring reports are provided in Appendix B.

MaineHealth/United Way Development Test Pits and Test Borings (2008)

A total of thirteen test borings, designated HA08-1 through HA08-13, were drilled within the limits of the southern parcel (midtownThree and midtownFour) in association with the proposed MaineHealth/United Way Development.

Subsurface explorations were drilled by Maine Test Borings, Inc. of Brewer, Maine under the direction of Haley & Aldrich in July and August 2008 using track-mounted Mobile Drill B-50 drill rig. Test borings were drilled to depths ranging from 14 to 102 ft BGS using 3.0-in. (NW-size) or 4.0-in. (HW-size) ID steel casing. Soil samples were collected continuously through the fill and harbor bottom deposits and at 5-ft (standard) or 10-ft intervals thereafter using the methodology described in the previous sections.

During the test boring program fill samples were collected, preserved and screened using a Thermo 580B Photoionization Detector (PID) to check for the presence of hydrocarbons. The results of the sample screening are recorded on the Headspace Screening Report provided in Appendix C.

Test borings HA08-5, HA08-7 and HA08-13 were advanced approximately 5 to 10 ft into bedrock using a 2.0-in. (NQ-size) ID diamond-tipped core barrel.

In-situ vane shear tests were conducted within the glaciomarine clay deposit in each of the test borings with the exception of HA08-3, HA08-6, HA08-9 and HA08-12. Results of the vane shear testing are summarized in Table II and are provided on the test boring logs in Appendix A.

A total of five, relatively undisturbed samples of marine clay were obtained in test borings HA08-4, HA08-8 and HA08-10. The samples were collected to perform laboratory consolidation testing aimed at determining the compressibility characteristics and the stress history of the clay. The samples were obtained by advancing a thin-wall Shelby Tube sampler into the clay using a piston sampler. Drilling mud was used while advancing the test borings in order to minimize soil disturbance. The drilling mud consists of a relatively thick and smooth mixture of water and bentonite-based powder.

Three observation wells were installed in completed boreholes HA08-5, HA08-7 and HA08-12 to provide information on the static groundwater level and to determine whether the groundwater levels at the site are affected by tidal fluctuations in nearby Back Cove. The observation wells consisted of 2-in. ID, machine-slotted PVC pipe and solid PVC riser pipe extending approximately 3 ft above existing ground surface. The observation wells were outfitted with a steel guardpipe and steel lock/cap assembly. Observation well installation and groundwater monitoring reports are provided in Appendix B.

Upon completion of the test borings, three test pits designated TP-201 through TP-203 were excavated adjacent to the previously installed observation wells. The test pits were excavated by Environmental Projects, Inc. of Auburn, Maine under the direction of Haley & Aldrich in October 2008. The test pits were excavated to depths ranging from approximately 8 to 11 ft BGS using a Komatsu PC 35MR excavator.

Proposed Somerset Street Improvements Test Borings (2013)

A total of six test borings, designated HA13-1 through HA13-6, were drilled in January 2013 along and within Somerset Street, between Elm and Pearl Streets in association with the proposed Somerset Street Improvements project. Each test boring was drilled adjacent to either the southern parcel (HA13-1-HA13-3; midtownThree and midtownFour) or the northern parcel (HA13-4-HA13-6; midtownOne and midtownTwo) and are discussed herein.

The test borings were drilled by Northern Test Borings, Inc. (NTB) of Gorham, Maine under the direction of Haley & Aldrich using a Diedrich D50 truck-mounted drill rig and 2.5-in ID hollow stem augers (HSAs). Each test boring was advanced to a depth of 20 ft BGS. Soil samples were collected continuously through the man-placed fill, harbor bottom deposit (if present) and into the underlying marine clay using the methodology described in the previous sections of this report.

SUBSURFACE CONDITIONS

Soil Unit and Bedrock Conditions

Generally, subsurface explorations encountered the following geologic units, presented in order of increasing depth below existing ground surface:

- Bituminous/Portland cement concrete and Fill
- Harbor Bottom Deposit
- Marine Clay
- Marine Sand
- Glacial Till
- Bedrock

Not all materials were encountered at each exploration location. Refer to Table I for a summary of the "geotechnical" test borings and Appendix A for logs of test pits and test borings, respectively. A brief description of each geologic unit is provided below.

A. Bituminous/ Portland cement concrete and Fill

Bituminous concrete and concrete surfaces were encountered in explorations along the east side (Somerset Street) of northern parcel (midtownOne and midtownTwo) as well as the 2013 test borings drilled within Somerset Street. The thickness of the material ranged from approximately 0.2 to 1.0 ft.

As previously discussed, the Bayside region of the Back Cove area once consisted of tidal mudflats and has a long history of filling. The subsurface explorations referenced herein encountered approximately 8 to 14 ft of fill, which consisted of the following:

- poorly-graded to well-graded GRAVEL (SP to SW) with varying percentages of silt,
- silty GRAVEL (GM)
- silty SAND (SM) with varying percentages of gravel,
- poorly-graded to well-graded SAND (SP to SM) with varying percentages of silt,
- sandy CLAY (CL) to clayey SAND (SC)
- Rock fill was encountered in test boring HA08-2 between approximately 10 and 14 ft BGS.

The fill soils generally contained ash, cinders, metal, wood, brick and concrete fragments some portions of which were stained black.

The granular fill soils were typically loose to very dense with SPT N-values ranging from 8 to 56 bpf. The cohesive fill soils (CL to SC) were generally soft to hard with SPT N-values ranging from 2 to 67 bpf.

B. Harbor Bottom Deposit

This deposit was encountered in many of the referenced test borings drilled within the northern and southern parcels as well as along and within Somerset Street. This deposit was previously exposed at ground surface in the tidal/mudflat area of the Back Cove prior to site filling (see Sanborn maps in Appendix E). Where encountered, the thickness of the layer ranged from approximately 1 to 9 ft, generally increasing in thickness towards Back Cove. This material typically consisted of gray, sandy SILT (ML) or sandy ORGANIC SOIL (OL/OH) with varying percentages of organic matter (rootlets, wood fragments etc.) and shells. In some locations the lower portions of the deposit consisted of gray silty SAND (SM), gray SILT (ML) with varying amounts of sand or gray lean CLAY (CL) with organic matter and shells. The deposit was generally very soft to very stiff with SPT N-values ranging from 1 to 24 bpf.

C. Marine Clay

Marine clay was encountered at each test boring location. The thickness of the deposit ranged from 20 to in excess of 50 ft, typically increasing in thickness to the south and west. The upper portion of the deposit consisted of olive-gray lean CLAY (CL) and was typically medium stiff to stiff with undrained shear strengths ranging from approximately 1,000 to 1,700 psf (referred to herein as the clay “crust”). The lower portion of the deposit consisted of soft to medium stiff, gray lean CLAY (CL) with undrained shear strengths typically ranging from 400 to 800 psf. The lowest (deepest) portions of the deposit typically contained frequent fine sand seams and partings.

D. Marine Sand

Marine sand was encountered sporadically across the site (northern and southern parcels). Where encountered, the marine sand was present directly beneath the marine clay layer. The thickness ranged from approximately 3 to 12 ft and generally increased to the north and east. The material typically consisted of gray, poorly-graded SAND (SP), well-graded SAND (SW) or silty SAND (SM), and was loose to medium dense with SPT N-values ranging from 3 to 23 bpf.

E. Glacial Till

Glacial till was encountered in several test borings underlying either the marine clay or marine sand layers and ranged in thickness from approximately 2 to 30 ft (typically between 2 and 10 ft), generally increasing to the south and west. The soil unit generally consisted of two different soil types: gray, silty SAND (SM) with a small percentage of fine gravel; and gray, clayey SAND with gravel (SC). The soil was typically medium dense to very dense with SPT N-values ranging from 14 to in excess of 100 bpf. Cobbles and boulders were not encountered in the glacial till during drilling of the test borings. However, their presence within the deposit is common and they may be present at other locations where explorations were not completed.

F. Bedrock

Bedrock was encountered in the majority of explorations completed within the northern and southern parcels at depths ranging from approximately 40 to 99 ft BGS. The bedrock surface generally slopes down from north to south. Bedrock encountered and sampled in the test borings consisted of the following:

- Very soft to soft, moderately to highly weathered PHYLLITE with occasional calcite veins and quartz intrusions,
- Very soft to moderately hard, fresh to highly weathered graphitic or chlorite SCHIST with frequent calcite veins and pyrite seams,
- Moderately hard, moderately to highly weathered SILTSTONE.

All rock types encountered are considered part of the Cape Elizabeth Formation. At most test boring locations several feet (up to approximately 7 ft but more typically 1-2 ft) of highly weathered and/or decomposed bedrock was encountered as indicated on the test boring logs included in Appendix A.

Rock quality designation (RQD) is a common parameter that is used to help assess the competency of sampled bedrock. RQD is defined as the sum of pieces of recovered bedrock greater than 4 in. in length divided by the total length of the bedrock core. RQD values for bedrock encountered at the site ranged from 0 to 78 percent and were typically less than 44 percent.

Groundwater Conditions

Observation wells were installed in completed boreholes HA06-2 (northern parcel; midtownOne and midtownTwo) and HA08-5, HA08-7 and HA08-12 (southern parcel; midtownThree and midtownFour).

Groundwater levels measured in the observation well installed in completed borehole HA06-2 in August and September 2006 ranged between El. 5.2 and El. 6.4, approximately 3 to 4 ft BGS.

In addition, Haley & Aldrich initially measured groundwater levels in the observation wells installed in southern parcel periodically using a manually operated water level indicator. Beginning on 7 August 2008 downhole transducers were installed in the observation wells and were programmed to record the groundwater level in the wells every 15 minutes. This was done to determine whether the static groundwater level is influenced by tidal fluctuations in nearby Back Cove. All groundwater depths were measured relative to the existing ground surface. The transducers were removed from the observation wells on 22 August 2008. Based on the data collected between 7 and 22 August 2008, groundwater levels were measured between 6 and 8 ft below existing ground surface and did not appear to be influenced by tidal fluctuations in Back Cove.

Groundwater levels can be expected to fluctuate, subject to seasonal variation, local soil conditions, topography and precipitation. Groundwater levels encountered during construction may differ from those observed in the test borings or observation well. Observation well installation and groundwater monitoring reports are provided in Appendix B.

GEOTECHNICAL LABORATORY SOIL TESTING

A laboratory testing program was conducted in 2008 in association with the proposed MaineHealth/United Way Development. The testing program was completed to assist in soil classification, evaluate reuse potential of the in-situ fill soils, and for determination of engineering properties (strength and compressibility) of the naturally deposited marine clay soils.

The testing program included four grain size analyses, four natural water content tests, six Atterberg Limits tests, and two constant rate of strain consolidation (CRSC) tests (used to determine the compressibility and stress history characteristics of marine clay). Prior to CRSC testing, radiography tests were conducted on Shelby tube samples collected during the subsurface exploration program. Radiography tests were run on five thin-walled tube samples of soil selected for laboratory testing to aid in assessing the sample quality, general material type and presence of areas of disturbance and variations in soils retrieved.

All laboratory testing was completed in accordance with applicable ASTM test procedures. Grain size analyses were conducted by Haley & Aldrich at our laboratory in Boston, Massachusetts. Natural water content, Atterberg Limits, and CRSC tests were completed by GeoTesting Express of Acton, Massachusetts. Laboratory test results are provided in Appendix D.

SUBSURFACE CONDITIONS IMPACTS ON DEVELOPMENT

Based on the subsurface conditions encountered during the previously completed subsurface investigations we have the following general geotechnical "observations" regarding the potential impacts that the subsurface conditions may have on the proposed midtown Development:

- Due to presence and compressible nature of the fill, harbor bottom and marine clay soils present at the site, pile foundations would likely be needed to support "heavily-loaded" buildings (e.g., greater than two stories). Construction of a single level of below-grade space beneath a "heavily-loaded" building may unload the site enough to eliminate the need for piles. Further study is required.

- Due to presence and compressible nature of the fill, harbor bottom and marine clay soils present at the site, modest raises in grade would likely result in ground surface, ground floor slab and utility settlement. We recommend that this be considered when planning final site grading.

- Due to the proximity of the water table to existing grade at the site and the proposed finish floor elevations, we anticipate that a foundation drainage system would not be needed with the exception of locally depressed portions of the building footprints (elevator pits, utility vaults, etc.).

- Based on the shear strength information obtained during the exploration program and the seismic requirements of the latest edition of the IBC Code, it is likely that proposed would have to be designed in accordance with either "Site Class D" or "Site Class E" classifications.

Please note that additional analyses will be conducted to verify the accuracy of these observations for the proposed midtown Development. Based on the "soft" condition of the soils present at the site, impacts of site grading, pavement evaluations and building and utility support should be considered carefully during the design-phase of the project. We will provide foundation support and other geotechnical design recommendations under separate cover during subsequent phases of the project.

LIMITATIONS

This report has been prepared for the exclusive use of The Federated Companies relative to the proposed midtown Development project in Portland, Maine. There are no intended beneficiaries other than The Federated Companies. Haley & Aldrich shall owe no duty whatsoever to any other person or entity on account of the Agreement or the report. Use of this report by any person or entity other than The Federated Companies for any purpose whatsoever is expressly forbidden unless such other person or entity obtains written authorization from The Federated Companies and from Haley & Aldrich. Use of this report by such other person or entity without the written authorization of The Federated Companies and Haley & Aldrich shall be at such other person's or entities sole risk, and shall be without legal exposure or liability to Haley & Aldrich.

Use of this Report by any person or entity, including by The Federated Companies, for a purpose other than the proposed midtown Development project in Portland, Maine is expressly prohibited unless such person or entity obtains written authorization from Haley & Aldrich indicating that the Report is adequate for such other use. Use of this Report by any other person or entity for such other purpose without written authorization by Haley & Aldrich shall be at such person's or entities sole risk, and shall be without legal exposure or liability to Haley & Aldrich.

The analyses and recommendations are based, in part, upon the data obtained from the referenced subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations then appear, it may be necessary to reevaluate the recommendations of this report.

CLOSURE

We appreciate the opportunity to provide geotechnical consulting services on this project. Please do not hesitate to call if you have any questions or comments.

STATE OF MAINE
WAYNE A. CHADBOURNE
No. 10620
LICENSED
PROFESSIONAL ENGINEER

Sincerely yours,
HALEY & ALDRICH, INC.

Bryan C. Steinert, P.E.
Project Manager|Senior Geotechnical Engineer

Wayne A. Chadbourne, P.E.
Vice President|Lead Geotechnical Engineer

Enclosures:

Table I -	Summary of Geotechnical Test Borings
Table II -	In-Situ Vane Shear Test Results (2 pages)
Figure 1 -	Project Locus
Figure 2 -	Site and Subsurface Exploration Location Plan (1 of 2)
Figure 3 -	Site and Subsurface Exploration Location Plan (2 of 2)
Appendix A –	Logs of Subsurface Explorations
Appendix B –	Observation Well Installation and Groundwater Monitoring Reports
Appendix C –	2008 Soil Screening Headspace Reports for Proposed MaineHealth/United Way Development
Appendix D -	2008 Laboratory Test Results for Proposed MaineHealth/United Way Development
Appendix E -	Historic Sanborn Maps

C: Fay, Spofford & Thorndike; Attn.: Bo Kennedy, P.E.

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REFERENCES

1. Report entitled, "Phase II Environmental Site Assessment, Union Branch Rail Line Property, Portland, Maine," prepared by Haley & Aldrich, Inc. for the Maine Department of Transportation, dated December 2000.

2. Report entitled, "Subsurface Explorations & Foundation Design Recommendations, Proposed Bayside Parking Garage, 25 Somerset Street, Portland, Maine," prepared by Haley & Aldrich, Inc. for Scott Simons Architects, dated 22 September 2006.

3. Report entitled, "Master Planning Geotechnical Investigation, Proposed Bayside Development, Parcels A and B, Somerset Street, Portland, Maine," prepared by Haley & Aldrich, Inc. for Scott Simons Architects, dated 25 October 2006.

4. Report entitled, "Geotechnical Data Report, MaineHealth/United Way Development, Somerset and Chestnut Streets, Portland, Maine," prepared by Haley & Aldrich, Inc. for Maine Medical Center, dated 10 September 2008.

5. Memorandum entitled, "Results of Test Pit Exploration Program, MaineHealth/United Way Development, Somerset and Chestnut Streets, Portland, Maine," prepared by Haley & Aldrich, Inc. for Maine Medical Center, dated 4 December 2008.

6. Memorandum entitled, "Subsurface Investigation and Geotechnical Evaluations, Proposed Somerset Street Improvements, Portland, Maine," prepared by Haley & Aldrich, Inc. for the City of Portland, dated 23 April 2013.

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TABLE I

Summary of Geotechnical Test Borings
midtown Development
Somerset Street, Portland, Maine

Test Boring No. [1]	Estimated Ground Surface Elevation [2,3]	Thickness of Strata[4,5,6] (ft)						Approximate Elevation of Top of Bedrock[2,3]	Approximate Elevation of Bottom of Exploration[2,3]
		Bituminous Concrete/ Concrete	Fill	Harbor Bottom Deposit	Marine Deposits		Glacial Till		
					Clay	Sand			
2006 Bayside Parking Garage & Master Planning:									
HA06-1	9.0	NE	11.0	4.0	20.5	2.5	1.8	-30.8	-53.4
HA06-2(OW)	9.0	NE	11.3	3.7	19.5	5.5	NE	-31.0	-38.2
HA06-3	9.0	NE	5.9	9.4	23.7	NE	>3.0	NE	-33.0
HA06-4	9.0	1.0	13.5	NE	27.5	NE	3.0	-36.0	-51.2
HA06-5	10.0	0.3	13.7	NE	29.5	NE	4.0	-37.5	-42.2
HA06-6	10.0	0.4	10.1	3.0	27.0	0.8	NE	-31.3	-31.5
HA06-7	10.5	NE	13.0	NE	51.0	NE	3.0	NE	-56.5
HA06-8	12.0	NE	14.0	NE	36.2	NE	1.6	-39.8	-42.0
HA06-9	9.5	NE	10.2	NE	27.8	NE	3.5	-32.0	-33.2
2008 MaineHealth/United Way Development:									
HA08-1	11.5	0.1	8.9	5.5	54.5	NE	29.5	-87.0	-90.5
HA08-2	9.0	NE	14.0	NE	47.0	NE	5.6	-57.6	-59.7
HA08-3	11.0	1.0	11.0	4.1	>1.9	--	--	--	-7.0
HA08-4	12.0	0.5	12.5	3.9	41.9	NE	5.6	-52.4	-54.0
HA08-5(OW)	9.0	NE	10.5	2.5	40.0	NE	9.5	-53.5	-59.8
HA08-6	10.0	NE	12.3	>1.7	--	--	--	--	-4.0
HA08-7(OW)	12.0	NE	12.5	1.5	24.0	NE	22.1	-48.1	-60.0
HA08-8	9.0	NE	9.5	4.3	29.2	5.6	NE	-39.6	-41.5
HA08-9	11.0	NE	12.0	2.0	>2.0	--	--	--	-5.0
HA08-10	9.0	NE	10.0	1.3	23.9	10.3	2.0	-38.5	-40.5
HA08-11	11.0	NE	12.5	1.7	19.8	12.0	6.5	-41.5	-44.0
HA08-12(OW)	11.0	NE	11.6	2.4	>2.0	--	--	--	-5.0
HA08-13	9.0	NE	12.5	NE	27.1	7.0	NE	-37.6	-47.0
2013 Somerset Street Improvements:									
HA13-1	7.5	0.2	8.3	5.5	>6.0	--	--	--	-12.5
HA13-2	8.0	0.2	8.2	2.6	>9.0	--	--	--	-12.0
HA13-3	7.5	0.3	7.7	3	>9.0	--	--	--	-12.5
HA13-4	9.0	0.3	9.2	3.8	>6.7	--	--	--	-11.0
HA13-5	10.0	0.2	9.3	4.5	>6.0	--	--	--	-10.0
HA13-6	10.0	0.2	8.3	5.0	>6.5	--	--	--	-10.0

Notes:

[1] Approximate test boring locations are shown on Figures 2 and 3, Site and Subsurface Exploration Location Plans.

[2] Ground surface elevations at test boring locations are approximate and were estimated by interpolating between elevation contour data provided by others at the time respective exploration programs were completed.

[3] Elevations are in feet and reference Portland City Datum.

[4] "NE" indicates stratum was not encountered in test boring.

[5] "--" indicates test boring was not drilled deep enough to determine presence of stratum.

[6] ">" indicates test boring was not drilled deep enough to determine full thickness of stratum.

Developed By:	BCS	11/10/2014
Checked By:	EAF	11/10/2014
Reviewed By:	WAC	11/12/2014

TABLE II
2006 Bayside Garage and Master Planning In-Situ Vane Shear Test Results
midtown Development
Somerset Street, Portland, Maine

Test Boring No.[1]	Estimated Ground Surface Elevation [2,3]	Vane Size (in. x in.)	Test No. [4]	Approximate Depth Below Existing Ground Surface (ft)			Approximate Elevation[2,3]			V_{max}[5,7] (in.-lbs)	$V_{remolded}$[5,7] (in.-lbs)	S_u[6,7] (psf)	$S_{u(remolded)}$[6,7] (psf)
				Top	-	Bottom	Top	-	Bottom				
HA06-1	9.0	3.5 x 8	FV1	20.4	-	21.0	-11.4	-	-12.0	>600	-	>690	-
		3.5 x 8	FV2	25.4	-	26.0	-16.4	-	-17.0	>600	-	>690	-
		2 x 8.5	FV3	26.3	-	27.0	-17.3	-	-18.0	300	100	1,010	340
		3.5 x 8	FV4	30.4	-	31.0	-21.4	-	-22.0	180	135	210	150
		3.5 x 8	FV5	31.4	-	32.0	-22.4	-	-23.0	>600	-	>690	-
HA06-2(OW)	9.0	2 x 8.5	FV1	20.3	-	21.0	-11.3	-	-12.0	167	49	560	170
		3.5 x 8	FV2	25.4	-	26.0	-16.4	-	-17.0	519	99	590	120
		3.5 x 8	FV3	30.4	-	31.0	-21.4	-	-22.0	528	31	600	40
HA06-3	9.0	2 x 8.5	FV1	15.3	-	16.0	-6.3	-	-7.0	426	123	1,430	410
		2 x 8.5	FV2	25.3	-	26.0	-16.3	-	-17.0	128	32	430	110
		2 x 8.5	FV3	28.3	-	29.0	-19.3	-	-20.0	129	31	430	100
		2 x 8.5	FV4	35.3	-	36.0	-26.3	-	-27.0	161	35	540	120
HA06-4	9.0	2 x 8.5	FV1	20.3	-	21.0	-11.3	-	-12.0	255	49	860	170
		2 x 8.5	FV2	30.3	-	31.0	-21.3	-	-22.0	135	50	450	170
		2 x 8.5	FV3	35.3	-	36.0	-26.3	-	-27.0	145	39	490	130
		2 x 8.5	FV4	40.3	-	41.0	-31.3	-	-32.0	169	39	570	130
HA06-5	10.0	3.5 x 8	FV1	20.4	-	21.0	-10.4	-	-11.0	>600	-	>690	-
		2 x 8.5	FV2	21.3	-	22.0	-11.3	-	-12.0	273	72	920	240
		3.5 x 8	FV3	30.4	-	31.0	-20.4	-	-21.0	508	112	580	130
		3.5 x 8	FV4	40.4	-	41.0	-30.4	-	-31.0	560	42	640	50
HA06-6	10.0	2 x 8.5	FV1	21.3	-	22.0	-11.3	-	-12.0	184	78	620	260
		3.5 x 8	FV2	25.4	-	26.0	-15.4	-	-16.0	465	338	530	390
		3.5 x 8	FV3	30.4	-	31.0	-20.4	-	-21.0	>600	127	>690	150
		3.5 x 8	FV4	36.4	-	37.0	-26.4	-	-27.0	231	110	260	130
		3.5 x 8	FV5	37.4	-	38.0	-27.4	-	-28.0	600	131	690	150
HA06-7	10.5	2 x 8.5	FV1	20.3	-	21.0	-9.8	-	-10.5	>500	-	1,680	-
		2 x 8.5	FV2	25.3	-	26.0	-14.8	-	-15.5	250	83	840	270
		2 x 8.5	FV3	35.3	-	36.0	-24.8	-	-25.5	175	33	590	110
		2 x 8.5	FV4	40.3	-	41.0	-29.8	-	-30.5	172	49	580	170
		2 x 8.5	FV5	56.0	-	56.7	-45.5	-	-46.2	258	-	860	-
HA06-9	9.5	3.5 x 8	FV1	20.4	-	21.0	-10.9	-	-11.5	490	100	560	110
		3.5 x 8	FV2	30.4	-	31.0	-20.9	-	-21.5	560	112	640	130

Notes:

[1] Approximate test boring locations are shown on Figures 2 and 3, Site and Subsurface Exploration Location Plans.

[2] Ground surface elevations at test boring locations are approximate and were estimated by interpolating between 2006 elevation contour data provided by others.

[3] Elevations are in feet and reference Portland City Datum.

[4] Vane numbers are shown on the Test Boring Logs presented in Appendix A.

[5] V_{max} and $V_{remolded}$ represent direct peak and remolded vane torque values, respectively.

[6] S_u and $S_{u(remolded)}$ represent corrected undrained peak and residual shear strengths, respectively, rounded to the nearest 10 psf.

[7] in-lbs = inch-pounds of torque, psf = pounds per square foot.

Developed By:	BCS	11/10/2014
Checked By:	EAF	11/10/2014
Reviewed By:	WAC	11/12/2014

TABLE II

2008 MaineHealth/United Way Development In-Situ Vane Shear Test Results
midtown Development
Somerset Street, Portland, Maine

Test Boring No.[1]	Estimated Ground Surface Elevation [2,3]	Vane Size (in. x in.)	Test No. [4]	Approximate Depth Below Existing Ground Surface (ft)			Approximate Elevation[2,3]			V_{max}[5,7] (in.-lbs)	$V_{remolded}$[5,7] (in.-lbs)	S_u[6,7] (psf)	$S_{u(remolded)}$[6,7] (psf)
				Top	-	Bottom	Top	-	Bottom				
HA08-1	11.5	2 x 8.5	FV1	25.3	-	26.0	-13.8	-	-14.5	264	72	900	250
		2 x 8.5	FV2	35.3	-	36.0	-23.8	-	-24.5	192	96	650	330
		2 x 8.5	FV3	45.3	-	46.0	-33.8	-	-34.5	204	120	690	410
		2 x 8.5	FV4	56.3	-	57.0	-44.8	-	-45.5	360	156	1,220	530
HA08-2	9.0	2 x 8.5	FV1	25.3	-	26.0	-16.3	-	-17.0	180	60	610	200
		2 x 8.5	FV2	35.3	-	36.0	-26.3	-	-27.0	120	36	410	120
		2 x 8.5	FV3	45.3	-	46.0	-36.3	-	-37.0	168	48	570	160
		2 x 8.5	FV4	55.3	-	56.0	-46.3	-	-47.0	144	36	490	120
HA08-4	12.0	3.5 x 8	FV1	22.3	-	23.0	-10.3	-	-11.0	950	-	1,050	-
		3.5 x 8	FV2	27.3	-	28.0	-15.3	-	-16.0	540	142	590	160
		3.5 x 8	FV3	30.3	-	31.0	-18.3	-	-19.0	450	80	500	90
		3.5 x 8	FV4	35.3	-	36.0	-23.3	-	-24.0	305	45	340	50
		3.5 x 8	FV5	40.3	-	41.0	-28.3	-	-29.0	360	108	400	120
		3.5 x 8	FV6	45.3	-	46.0	-33.3	-	-34.0	384	96	420	110
		3.5 x 8	FV7	50.3	-	51.0	-38.3	-	-39.0	552	72	610	80
HA08-5(OW)	9.0	2 x 8.5	FV1	20.3	-	21.0	-11.3	-	-12.0	212	75	720	260
		2 x 8.5	FV2	25.3	-	26.0	-16.3	-	-17.0	213	59	720	200
		2 x 8.5	FV3	30.3	-	31.0	-21.3	-	-22.0	215	51	730	170
		2 x 8.5	FV4	35.3	-	36.0	-26.3	-	-27.0	175	85	600	290
		2 x 8.5	FV5	40.3	-	41.0	-31.3	-	-32.0	175	55	600	190
		2 x 8.5	FV6	50.3	-	51.0	-41.3	-	-42.0	205	109	700	370
HA08-7(OW)	12.0	2 x 8.5	FV1	20.3	-	21.0	-8.3	-	-9.0	245	95	830	320
		2 x 8.5	FV2	25.3	-	26.0	-13.3	-	-14.0	215	51	730	170
		2 x 8.5	FV3	30.3	-	31.0	-18.3	-	-19.0	201	82	680	280
		2 x 8.5	FV4	35.3	-	36.0	-23.3	-	-24.0	255	62	870	210
HA08-8	9.0	3.5 x 8	FV1	18.3	-	19.0	-9.3	-	-10.0	420	60	460	70
		3.5 x 8	FV2	22.3	-	23.0	-13.3	-	-14.0	552	48	610	50
		3.5 x 8	FV3	30.3	-	31.0	-21.3	-	-22.0	346	108	380	120
		3.5 x 8	FV4	35.3	-	36.0	-26.3	-	-27.0	708	132	780	150
		3.5 x 8	FV5	39.3	-	40.0	-30.3	-	-31.0	936	72	1,030	80
HA08-10	9.0	3.5 x 8	FV1	19.3	-	20.0	-10.3	-	-11.0	468	96	520	110
		3.5 x 8	FV2	23.3	-	24.0	-14.3	-	-15.0	660	120	730	130
		3.5 x 8	FV3	27.3	-	28.0	-18.3	-	-19.0	360	84	400	90
		3.5 x 8	FV4	30.3	-	31.0	-21.3	-	-22.0	204	62	220	70
HA08-11	11.0	2 x 8.5	FV1	25.3	-	26.0	-14.3	-	-15.0	215	50	720	170
HA08-13	9.0	2 x 8.5	FV1	20.3	-	21.0	-11.3	-	-12.0	199	50	670	170
		2 x 8.5	FV2	25.3	-	26.0	-16.3	-	-17.0	174	71	590	240
		2 x 8.5	FV3	30.3	-	31.0	-21.3	-	-22.0	82	75	280	250
		2 x 8.5	FV4	35.3	-	36.0	-26.3	-	-27.0	215	64	720	220

Notes:

[1] Approximate test boring locations are shown on Figures 2 and 3, Site and Subsurface Exploration Location Plans.

[2] Ground surface elevations at test boring locations are approximate and were estimated by interpolating between 2008 elevation contour data provided by others.

[3] Elevations are in feet and reference Portland City Datum.

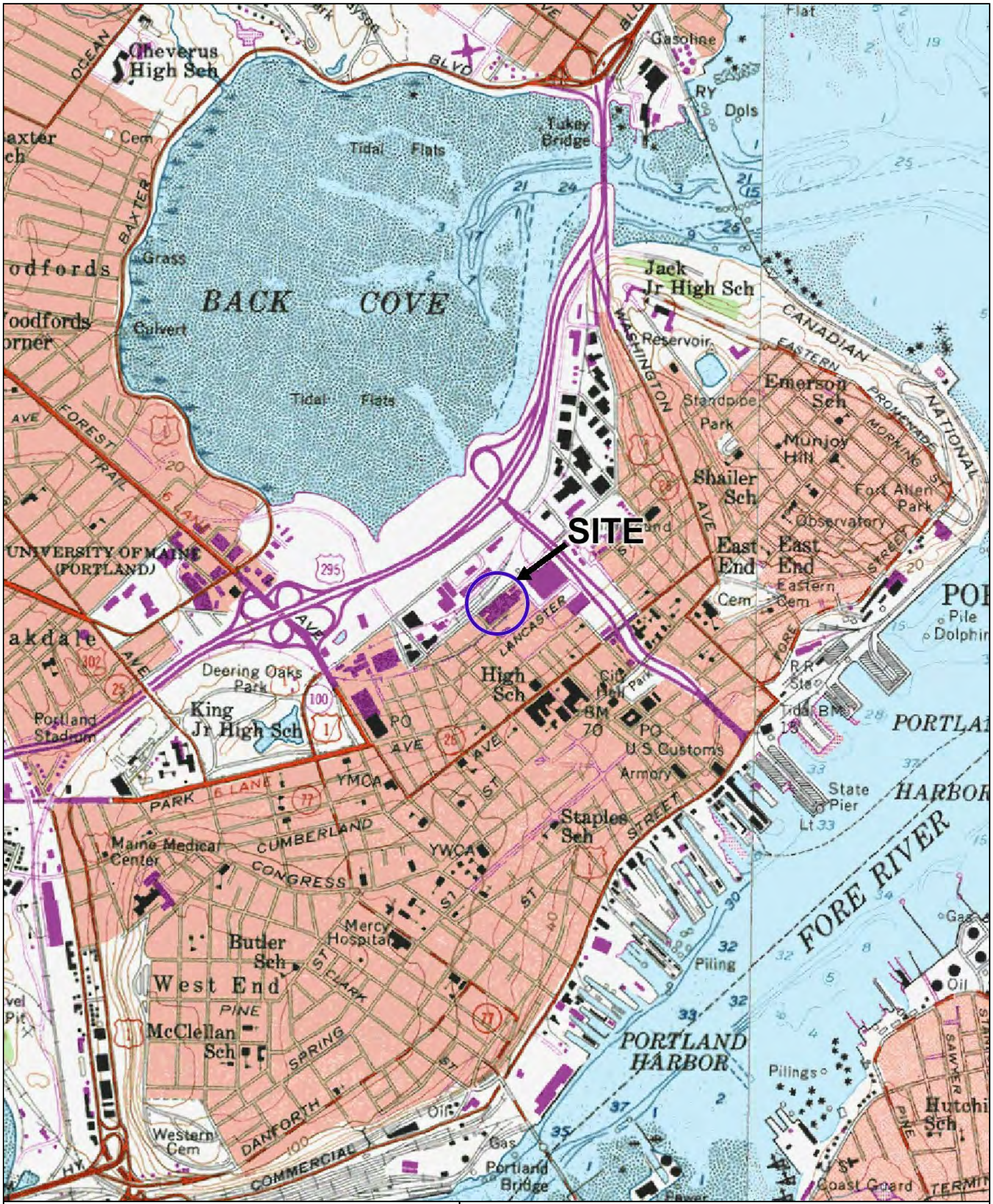
[4] Vane numbers are shown on the Test Boring Logs presented in Appendix A.

[5] V_{max} and $V_{remolded}$ represent direct peak and remolded vane torque values, respectively.

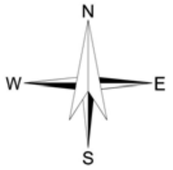
[6] S_u and $S_{u(remolded)}$ represent corrected undrained peak and residual shear strengths, respectively, rounded to the nearest 10 psf.

[7] in-lbs = inch-pounds of torque, psf = pounds per square foot.

Developed By:	BCS	11/10/2014
Checked By:	EAF	11/10/2014
Reviewed By:	WAC	11/12/2014



SITE COORDINATES:43°39'45"N 70°15'39"W



U.S.G.S. QUADRANGLE: PORTLAND WEST, ME

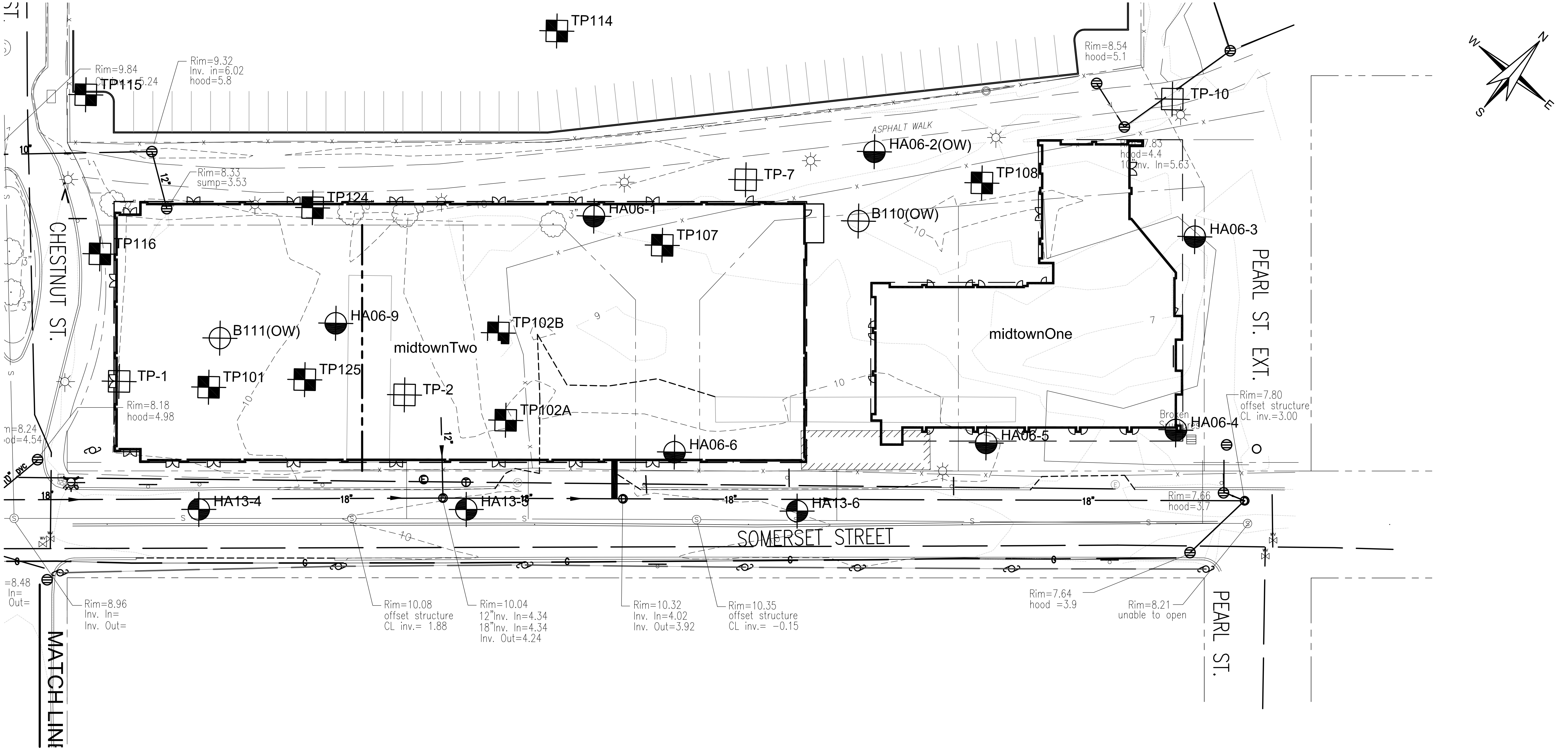
HALEY& ALDRICH

midtown DEVELOPMENT
SOMERSET STREET
PORTLAND, MAINE

PROJECT LOCUS

SCALE: 1:24,000
NOVEMBER 2014

FIGURE 1



NOTES:

1. EXISTING SITE CONDITIONS, CONTOURS OF EXISTING GROUND SURFACE ELEVATIONS AND LOCATION AND ORIENTATION OF EXISTING SITE FEATURES ARE TAKEN FROM THE ELECTRONIC AUTOCAD FILE "3062-EXISTING W BLDG.dwg" PROVIDED BY FAY, SPOFFORD & THORNDIKE ON 7 NOVEMBER 2014.
2. THE LOCATION AND ORIENTATION OF PROPOSED BUILDING FOOTPRINTS ARE TAKEN FROM THE ELECTRONIC AUTOCAD FILE "3062-EXISTING W BLDG.dwg" PROVIDED BY FAY, SPOFFORD & THORNDIKE ON 7 NOVEMBER 2014.
3. LOCATIONS OF SUBSURFACE EXPLORATIONS ARE APPROXIMATE AND WERE DETERMINED BY TAPING/PACING DISTANCES FROM EXISTING SITE FEATURES.
4. ELEVATIONS ARE IN FEET AND REFERENCE PORTLAND CITY DATUM.
5. SUBSURFACE EXPLORATIONS WERE MONITORED IN THE FIELD BY HALEY & ALDRICH, INC. OR TEWHEY ASSOCIATES PERSONNEL.
6. REFER TO APPENDIX A FOR LOGS OF SUBSURFACE EXPLORATIONS.

LEGEND:

◒ HA13-4	DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY NORTHERN TEST BORING OF GORHAM, MAINE ON 31 JANUARY 2013 FOR THE PROPOSED SOMERSET STREET IMPROVEMENT PROJECT
◒ HA06-1	DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY MAINE TEST BORINGS OF HERMON, MAINE IN AUGUST 2006 FOR THE PROPOSED BAYSIDE PARKING GARAGE AND MASTER PLANNING PROJECTS
⊕ B110	DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY MAINE TEST BORINGS OF HERMON, MAINE IN NOVEMBER 2000 FOR THE UNION BRANCH RAIL LINE PROPERTY PHASE II ENVIRONMENTAL SITE ASSESSMENTS
▚ TP101	DESIGNATION AND APPROXIMATE LOCATION OF TEST PIT EXCAVATED BY ENVIRONMENTAL PROJECTS, INC. OF GRAY, MAINE IN NOVEMBER 2000 FOR FOR THE UNION BRANCH RAIL LINE PROPERTY PHASE II ENVIRONMENTAL SITE ASSESSMENTS
⊞ TP2	DESIGNATION AND APPROXIMATE LOCATION OF TEST PIT EXCAVATED BY COMMERCIAL PAVING & RECYCLING OF SCARBOROUGH, MAINE IN OCTOBER 1988 FOR PORTLAND BROWNFIELDS PROJECT (PHASE II ESA)
10 — —	ELEVATION CONTOUR OF EXISTING GROUND SURFACE
(OW)	DENOTES OBSERVATION WELL INSTALLED IN COMPLETED BOREHOLE

0 50 100
SCALE IN FEET

HALEY & ALDRICH

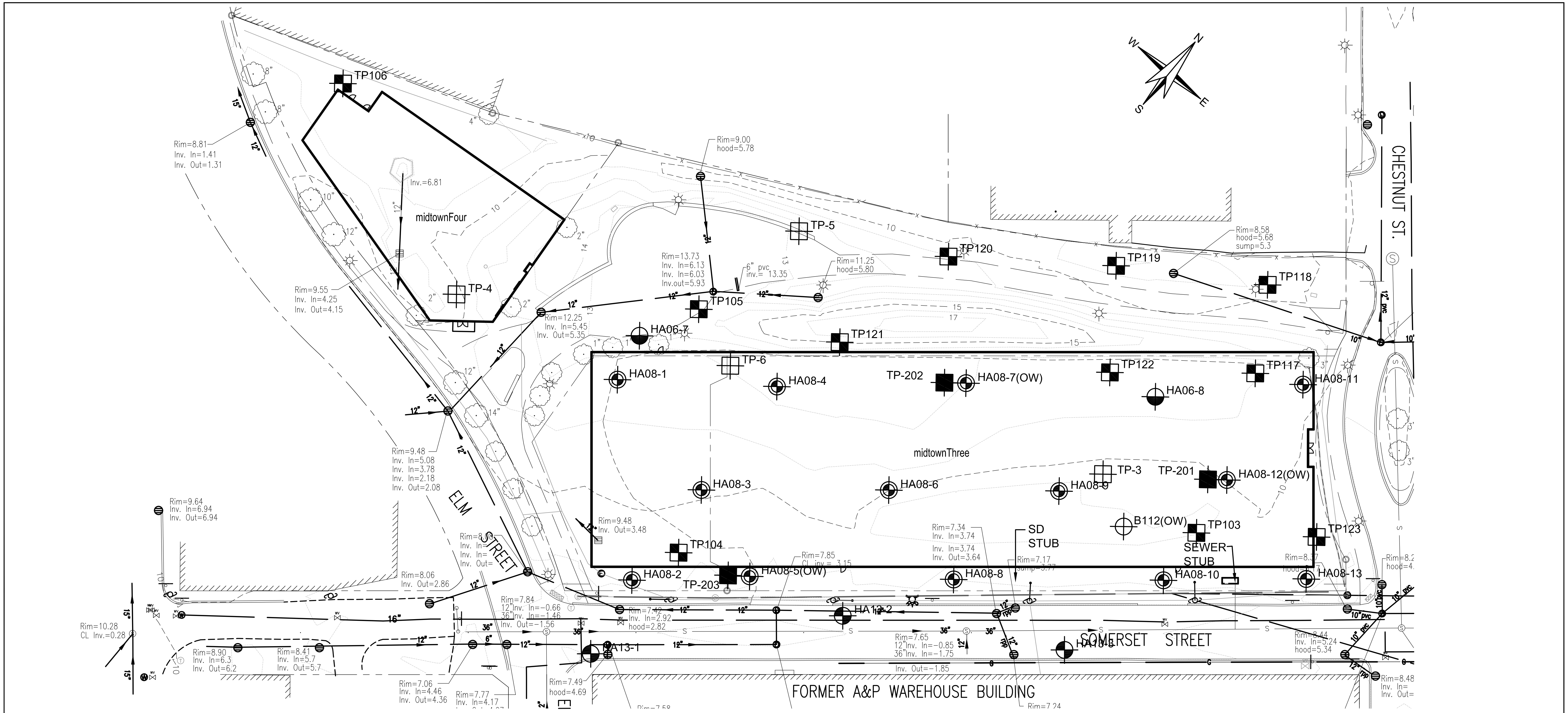
midtown DEVELOPMENT
SOMERSET STREET
PORTLAND, MAINE

SITE AND SUBSURFACE EXPLORATION LOCATION PLAN (1 OF 2)

SCALE: AS SHOWN
NOVEMBER 2014

FIGURE 2

G:\PROJECTS\38354 - MARITIME LANDING\AUTOCAD\2013_0517_HAI_FIG2.DWG



NOTES:

1. EXISTING SITE CONDITIONS, CONTOURS OF EXISTING GROUND SURFACE ELEVATIONS AND LOCATION AND ORIENTATION OF EXISTING SITE FEATURES ARE TAKEN FROM THE ELECTRONIC AUTOCAD FILE "3062-EXISTING W BLDG.dwg" PROVIDED BY FAY, SPOFFORD & THORNDIKE ON 7 NOVEMBER 2014.
2. THE LOCATION AND ORIENTATION OF PROPOSED SITE FEATURES ARE TAKEN FROM THE ELECTRONIC AUTOCAD FILE "3062-EXISTING W BLDG.dwg" PROVIDED BY FAY, SPOFFORD & THORNDIKE ON 7 NOVEMBER 2014.
3. LOCATIONS OF SUBSURFACE EXPLORATIONS ARE APPROXIMATE AND WERE DETERMINED BY TAPING/PACING DISTANCES FROM EXISTING SITE FEATURES.
4. ELEVATIONS ARE IN FEET AND REFERENCE PORTLAND CITY DATUM.
5. SUBSURFACE EXPLORATIONS WERE MONITORED IN THE FIELD BY HALEY & ALDRICH, INC. OR TEWHEY ASSOCIATES PERSONNEL.
6. REFER TO APPENDIX A FOR LOGS OF SUBSURFACE EXPLORATIONS.

LEGEND:

HA13-1	DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY NORTHERN TEST BORING OF GORHAM, MAINE ON 31 JANUARY 2013 FOR THE PROPOSED SOMERSET STREET IMPROVEMENT PROJECT
HA08-1	DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY MAINE TEST BORINGS OF HERMON, MAINE IN 2008 FOR THE PROPOSED MAINEHEALTH/UNITED WAY DEVELOPMENT
B112	DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING DRILLED BY MAINE TEST BORINGS OF HERMON, MAINE IN NOVEMBER 2000 FOR THE UNION BRANCH RAIL LINE PROPERTY PHASE II ENVIRONMENTAL SITE ASSESSMENTS
TP-201	DESIGNATION AND APPROXIMATE LOCATION OF TEST PIT EXCAVATED BY ENVIRONMENTAL PROJECTS, INC. OF GRAY, MAINE IN OCTOBER 2008 FOR THE MAINEHEALTH/UNITED WAY DEVELOPMENT
TP108	DESIGNATION AND APPROXIMATE LOCATION OF TEST PIT EXCAVATED BY ENVIRONMENTAL PROJECTS, INC. OF GRAY, MAINE IN NOVEMBER 2000 FOR FOR THE UNION BRANCH RAIL LINE PROPERTY PHASE II ENVIRONMENTAL SITE ASSESSMENTS
TP4	DESIGNATION AND APPROXIMATE LOCATION OF TEST PIT EXCAVATED BY COMMERCIAL PAVING & RECYCLING OF SCARBOROUGH, MAINE IN OCTOBER 1988 FOR PORTLAND BROWNFIELDS PROJECT (PHASE II ESA)
10 — — —	ELEVATION CONTOUR OF EXISTING GROUND SURFACE
(OW)	DENOTES OBSERVATION WELL INSTALLED IN COMPLETED BOREHOLE

0 60 120

SCALE IN FEET

HALEY & ALDRICH

midtown DEVELOPMENT
SOMERSET STREET
PORTLAND, MAINE

SITE AND SUBSURFACE EXPLORATION LOCATION PLAN (2 OF 2)

SCALE: AS SHOWN
NOVEMBER 2014

FIGURE 3

G:\PROJECTS\38354 - MARITIME LANDING\AUTOCAD\2013_0517_HAI_FIG2.DWG

APPENDIX A

Logs of Subsurface Explorations

1998 Test Pit Logs for
Phase II Environmental Site Assessment
(see Reference 1)

TEWHEY ASSOCIATES **TEST PIT LOG**

PROJECT: Portland Brownfields - Portland Terminal **BACKHOE:** Commercial Paving
PROJECT NO: 97-005
DATE: 10-29-98 **NO:** TP-1
INVESTIGATOR J. Tewhey **LOCATION:** Middle of Site

PID (ppm)	Ref. Soil Samples (Recovery)	Description	Depth (Feet)
<1.0	**S-1**	Coarse black sand and gravel with coal and ash (FILL).	
			1.0
		Light brown medium sand with gray ash lenses (FILL).	
2.0	S-2		2.0
			3.0
		Gray to olive stiff sandy silt to blue wet silty clay (FILL).	
			4.0
			5.0
			6.0
			7.0
			8.0
			9.0
<1.0	S-3		
			10.0
1.0	**S-4**	Black bay mud with glass and pottery chards.	
			11.0
			12.0
		Dark gray silty clay with clam shells (native).	
			13.0
			14.0
		Bottom of Excavation = 14 ft.	
			15.0
			16.0
			17.0
			18.0
			19.0
			20.0

Comments:	Sample ID in **bold** indicates soil sample was submitted to laboratory for analysis.
Water Table Present:	Wetness observed at 7 ft below ground surface.

WHEY ASSOCIATES TEST PIT LOG

JECT: Portland Brownfields- Portland Terminal BACKHOE: Commercial Paving
JECT NO: 97-005
ATE: 10-29-98 NO: TP-2
ESTIGATOR E. Texter LOCATION: Middle of Site

PID (ppm)	Ref. Soil Samples (Recovery)	Description	Depth (Feet)
2.1	**S-1**	Coarse black sand and gravel with coal and ash (FILL).	1.0
		Light brown medium sand, light gray at depth (FILL).	2.0
73.0	**S-2**		3.0
			4.0
			5.0
			6.0
250	**S-3**	Bottom of Excavation = 6 ft.	7.0
			8.0
			9.0
			10.0
			11.0
			12.0
			13.0
			14.0
			15.0
			16.0
			17.0
			18.0
			19.0
			20.0

ments:	Sample ID in **bold** indicates soil sample was submitted to laboratory for analysis.
ter Table Present:	Wetness observed at 4 ft below ground surface.

TEWHEY ASSOCIATES **TEST PIT LOG**

PROJECT: Portland Brownfields - Portland Terminal
BACKHOE: Commercial Paving
PROJECT NO: 97-005
DATE: 10-29-98
NO: TP-8
INVESTIGATOR J. Tewhey
LOCATION: Middle of Site

PID (ppm)	Ref. Soil Samples (Recovery)	Description	Depth (Feet)
			1.0
1.5	**S-1**	Coarse black sand and gravel with coal and ash (FILL).	
		Light brown coarse sand to gray medium sand and silty sand (FILL).	2.0
			3.0
			4.0
			5.0
			6.0
1.5	S-2		
			7.0
			8.0
		Black bay mud with glass and pottery chards.	9.0
<1.0	**S-3**		
			10.0
		Bottom of Excavation = 10.5 ft.	11.0
			12.0
			13.0
			14.0
			15.0
			16.0
			17.0
			18.0
			19.0
			20.0

Comments:	Sample ID in **bold** indicates soil sample was submitted to laboratory for analysis.
Water Table Present:	Wetness observed at 4 ft below ground surface.

TEWHEY ASSOCIATES TEST PIT LOG

PROJECT: Portland Brownfields-Portland Terminal
BACKHOE: Commercial Paving
PROJECT NO: 97-005
DATE: 10-29-98
NO: TP-4
INVESTIGATOR J. Tewhey
LOCATION: West Side of Site

PID (ppm)	Ref. Soil Samples (Recovery)	Description	Depth (Feet)
		4-inches loam over brown gravel with lenses of black granular soils and bricks (FILL).	1.0
			2.0
			3.0
2.0	**S-1**	Dense black medium sand with silt (FILL).	4.0
			5.0
			6.0
1.5	S-2	Gray ash (FILL).	7.0
<1.0	**S-3**	Demolition debris... bricks and wood fragments (FILL).	8.0
			9.0
			10.0
			11.0
		Black bay mud with glass and pottery chards.	12.0
		Bottom of Excavation = 12 ft.	13.0
			14.0
			15.0
			16.0
			17.0
			18.0
			19.0
			20.0

Comments:	Sample ID in **bold** indicates soil sample was submitted to laboratory for analysis.
Water Table Present:	Wetness observed at 7 ft below ground surface.

TEWHEY ASSOCIATES **TEST PIT LOG**

PROJECT:	Portland Brownfields- Portland Terminal	BACKHOE:	Commercial Paving
PROJECT NO:	97-005		
DATE:	10-29-98	NO:	TP-5
INVESTIGATOR	J. Tewhey	LOCATION:	West Side of Site

PID (ppm)	Ref. Soil Samples (Recovery)	Description	Depth (Feet)
		Brown gravel with lenses of black granular soils and bricks (FILL).	1.0
2.0	S-1		2.0
			3.0
		Gray ash (FILL).	4.0
			5.0
			6.0
2.0	**S-2**		7.0
			8.0
			9.0
			10.0
		Black bay mud with glass and pottery shards.	11.0
		Bottom of Excavation = 11 ft.	12.0
			13.0
			14.0
			15.0
			16.0
			17.0
			18.0
			19.0
			20.0

Comments:	Sample ID in **bold** indicates soil sample was submitted to laboratory for analysis.
Water Table Present:	Wetness observed at 4 ft below ground surface.

TEWHEY ASSOCIATES **TEST PIT LOG**

PROJECT:	Portland Brownfields- Portland Terminal	**BACKHOE:**	Commercial Paving
PROJECT NO:	97-005		
DATE:	10-29-98	**NO:**	TP-6
INVESTIGATOR	J. Tewhey	**LOCATION:**	West Side of Site

PID (ppm)	Ref. Soil Samples (Recovery)	Description	Depth (Feet)
		Coarse black sand and gravel with coal and ash (FILL).	
			1.0
1.0	**S-1**		
			2.0
			3.0
		Dark brown, black, silty fine sand (FILL).	
			4.0
			5.0
2.0	S-2	Gray ash (FILL).	
			6.0
			7.0
2.0	**S-3**	Black dump refuse... glass, wood, pottery, metal, leather; sewerage odor (FILL).	
			8.0
			9.0
			10.0
		Dark gray silty clay with clam shells (native).	
			11.0
		Bottom of Excavation = 11 ft.	
			12.0
			13.0
			14.0
			15.0
			16.0
			17.0
			18.0
			19.0
			20.0

Comments:	Sample ID in **bold** indicates soil sample was submitted to laboratory for analysis.
Water Table Present:	Wetness observed at 5 ft below ground surface.

WHEY ASSOCIATES		**TEST PIT LOG**	
OJECT:	Portland Brownfields- Portland Terminal	BACKHOE:	Commercial Paving
OJECT NO:	97-005		
ATE:	10-29-98	NO:	TP-7
ESTIGATOR	J. Eastley	LOCATION:	Middle of Site

PID (ppm)	Ref. Soil Samples (Recovery)	Description	Depth (Feet)
1.0	**S-1**	Coarse black sand and gravel with coal and ash (FILL).	1.0
		Blue gray silty clay (FILL).	2.0
			3.0
			4.0
			5.0
			6.0
			7.0
			8.0
			9.0
			10.0
			11.0
		Dark gray silty CLAY with clam shells (native).	12.0
		Bottom of Excavation = 12 ft.	13.0
			14.0
			15.0
			16.0
			17.0
			18.0
			19.0
			20.0

ments:	Sample ID in **bold** indicates soil sample was submitted to laboratory for analysis.
ater Table Present:	Wetness observed at 11 ft below ground surface.

HEY ASSOCIATES TEST PIT LOG

JECT: Portland Brownfields- Portland Terminal BACKHOE: Commercial Paving
JECT NO: 97-005
TE: 10-29-98 NO: TP-10
STIGATOR J. Toohey LOCATION: East Side of Site

PID (ppm)	Ref. Soil Samples (Recovery)	Description	Depth (Feet)
<1.0	**S-1**	Coarse black sand and gravel with coal and ash (FILL).	
			1.0
		Light brown medium sand (FILL).	
			2.0
		Gray silty clay (FILL).	
			3.0
			4.0
			5.0
2.0	**S-2**	Light brown medium sand (FILL).	
			6.0
			7.0
		Bottom of Excavation = 7 ft.	
			8.0
			9.0
			10.0
			11.0
			12.0
			13.0
			14.0
			15.0
			16.0
			17.0
			18.0
			19.0
			20.0

ents:	Sample ID in bold indicates soil sample was submitted to laboratory for analysis.
Table Present:	Wetness observed at 5 ft below ground surface.

2000 Test Pit Logs for
Phase II Environmental Site Assessment
(see Reference 1)

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP101

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 20 November 2000
Weather Cloudy
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:
Location: See Plan
Groundwater depths/entry rates (in./min.):

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	101-1 0'			>50% cinders and coal fragments in black stained matrix of medium to fine SAND with silt -RAILYARD FILL-										
	101-2 1'	0.8	SW	Yellow-brown to light brown well graded SAND with lenses of silty clay as in 101-3, dry -SAND FILL-			10	80	5	5				
		1.5	ML	Olive gray to gray clayey SILT with sand, soft, moist -CLAYEY SILT FILL-										
2														
	101-3 3.5'													
4														
6														
8														
10		10.0		Bottom of Excavation at 10.0 ft.										

Obstructions:

Remarks: Running sand caused collapse of pit

Field Tests

Dilatancy	R - Rapid	S - Slow	N - None	
Toughness	L - Low	M - Medium	H - High	
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit
at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)
Pit Depth 10.0
Pit Length x Width 4.0 x 12.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP102A

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 20 November 2000
Weather Cloudy
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:
Location: See Plan
Groundwater depths/entry rates (in./min.): Water entering slowly at 5.0 ft.

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	102A-1 0'			-RAILYARD FILL- (See 101-1)										
	102A-2 1'	0.8	SW	Red-brown, yellow-brown, light brown well-graded SAND with 3-4inch thick lenses of dark granular railbed material as in 102A-1			10	80	5	5				
2				-SAND FILL-										
		2.5	ML	Olive-gray to gray clayey SILT with sand, medium stiff, increasingly moist with depth										
4				-CLAYEY SILT FILL-										
	102A-3 5'													
6														
8														
10		10.0		Bottom of Excavation at 10.0 ft.										

Obstructions:

Remarks: Running sand caused collapse of pit

Field Tests
Dilatancy R - Rapid S - Slow N - None
Toughness L - Low M - Medium H - High
Plasticity N - Nonplastic L - Low M - Medium H - High
Dry Strength N - None L - Low M - Medium H - High V - Very High

Standing Water in Completed Pit
at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)
Pit Depth 10.0
Pit Length x Width 4.0 x 12.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP102B

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 20 November 2000
Weather Cloudy
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:
Location: See Plan
Groundwater depths/entry rates (in./min.): Water moderate at 4.0 ft.

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	102B-1 0.5'	0.8		>50% cinders and coal fragments in black stained matrix of medium to fine SAND with silt -RAILYARD FILL-										
			SW	Light brown to brown well-graded SAND, mps= 1.0 inch -SAND FILL-	5	5	10	70	5	5				
2														
4														
	102B-2 5'													
6														
		7.0		Bottom of Excavation at 7.0 ft.										

Obstructions:

Remarks: Running sands at 6.0 ft., pit collapsed

Field Tests

Dilatancy	R - Rapid	S - Slow	N - None		
Toughness	L - Low	M - Medium	H - High		
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit
at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)
Pit Depth 7.0
Pit Length x Width 4.0 x 12.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP103

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 20 November 2000
Weather Cloudy
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:
Location: See Plan
Groundwater depths/entry rates (in./min.): Water inflow is rapid from -HARBOR BOTTOM DEPOSIT- Water slow at 3.0 ft.(perched), rapid at 10.0 ft.

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	103-1 0'			-RAILYARD FILL- (See 101-1)										
	103-2 1'	0.5	SW	Light brown well-graded SAND, few lenses of dark granular rail bed material as in 103-1 -SAND FILL-			10	80	5	5				
2	103-3 3'	2.0	ML	Olive-gray clayey SILT with sand and gravel, medium stiff -CLAYEY SILT FILL-										
4 6 8	103-4 5.5'	4.0	ML	Gray clayey SILT with sand, very soft -CLAYEY SILT FILL-										
10	103-5 9.5'	9.5		Black-brown organic material with some clay -HARBOR BOTTOM DEPOSIT-(FILL)										
	103-6 11'	11.0	CL	Olive-gray lean CLAY with silt, trace medium sand, medium stiff, presence of clam shell fossils is diagnostic of -NATIVE SOILS- <<C>-MARINE DEPOSIT-										
12		12.0		Bottom of Exploration at 12.0 ft.										

Obstructions:

Remarks:

Field Tests

Dilatancy	R - Rapid	S - Slow	N - None		
Toughness	L - Low	M - Medium	H - High		
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit
at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)
Pit Depth 12.0
Pit Length x Width 4.0 x 14.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP104

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 20 November 2000
Weather Cloudy
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:
Location: See Plan
Groundwater depths/entry rates (in./min.): Water emerges from ash at 6.0 ft., has slight sheen

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	104-1 0.5'			Gray coarse coal ash mixed with 20% silty LOAM -ASH FILL-										
	104-2 1.5'	1.5	ML	Olive-gray clayey SILT with sand, stiff -CLAYEY SILT FILL-										
2														
		2.5		Gray, coarse coal ash -ASH FILL-										
4														
6		6.0		Dark brown to black heterogeneous mix of ash, organic marine deposit, trash and clayey SILT -ASH AND REFUSE FILL-										
	104-3 7'													
8														
	104-4 9'			Black stained coarse COAL ASH with trash, glass, ceramic, leather, metal, shell, wood										
		9.5	CL	Olive-gray lean CLAY with silt -MARINE DEPOSIT-										
10		10.0		Bottom of Excavation at 10.0 ft.										

Obstructions:

Remarks:

Field Tests

Dilatancy		R - Rapid	S - Slow	N - None	
Toughness		L - Low	M - Medium	H - High	
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit
at depth 7.5 ft
measured after 0.25 hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)
Pit Depth 10.0
Pit Length x Width 4.0 x 14.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP105

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 20 November 2000
Weather Cloudy
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:
Location: See Plan
Groundwater depths/entry rates (in./min.):

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand				Field Test			
					% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0				Heterogeneous mix of used brick, sheets of metal, concrete blocks in matrix of brown sandy LOAM										
				-MIXED FILL-										
2				Solid mass of wood in matrix of black rubber/plastic prevented digging										
		3.5		Bottom of Excavation at 3.5 ft.										

Obstructions: Wood and rubber/plastic massive block

Remarks:

Field Tests

Dilatancy	R - Rapid	S - Slow	N - None		
Toughness	L - Low	M - Medium	H - High		
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit
at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)
Pit Depth 3.5
Pit Length x Width 4.0 x 10.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP106

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 20 November 2000
Weather Cloudy
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:

Location: See Plan

Groundwater depths/entry rates (in./min.): Water entering pit slowly at 4.5 ft. (perched)

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand				Field Test			
					% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0	106-1 0'		SW	Brown to dark brown well sorted SAND, mps=1.0 in. -SAND FILL-	10	5	5	70	5	5				
	106-2 1.5'	1.0		-RAILYARD FILL- (See 101-1)										
2														
	106-3 3.5'	3.0		Gray coarse coal ash -ASH FILL-										
4	106-4 4.5'	4.5		Gray-brown coarse SAND with silt -MARINE DEPOSIT-										
		5.0												
6			ML	Olive-gray clayey SILT which becomes silty CLAY with increasing depth; stiff at 6.0 ft. to soft at 10.0 ft., fossil clam shells at 11.0 ft. -MARINE DEPOSIT-										
8														
10			CL											
		11.5		Bottom of Excavation at 11.5 ft.										

Obstructions:

Remarks: Deposit at 4.5 ft. represents former bottom sediments of back cove. Deposits at 5.0 ft. are interpreted to be native soils.

Field Tests

Dilatancy	R - Rapid	S - Slow	N - None		
Toughness	L - Low	M - Medium	H - High		
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit

at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)

Pit Depth 11.5
Pit Length x Width 4.0 x 13.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP107

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 21 November 2000
Weather Clear
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:

Location: See Plan

Groundwater depths/entry rates (in./min.): Water rapid at 9.5 ft.; entering pit on top of native clay soils at 9.75 ft.

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand				Field Test			
					% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0	107-1 0'			-RAILYARD FILL- (See 101-1)										
		0.8 1.0	SW	Brown well-graded coarse SAND										
	107-2 1.5'		ML	Olive-brown clayey SILT with sand, medium stiff, dry										
2				-CLAYEY SILT FILL-										
4														
6														
	107-3 7'		ML	Olive-gray clayey SILT with SAND, soft, moist										
8														
10	107-4 9.75'	9.8	CL	Olive-gray lean CLAY with silt and trace medium sand, medium stiff, clam shell fossils are diagnostic of native soils										
		11.0		-MARINE DEPOSIT- Bottom of Excavation at 11.0 ft.										

Obstructions:

Remarks:

Field Tests

Dilatancy	R - Rapid	S - Slow	N - None		
Toughness	L - Low	M - Medium	H - High		
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit
at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)
Pit Depth 11.0
Pit Length x Width 4.0 x 12.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

TEST PIT LOG

Test Pit No. TP108

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 21 November 2000
Weather Clear
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:
Location: See Plan
Groundwater depths/entry rates (in./min.): Water moderately flowing at 3.5 ft.

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand				Field Test			
					% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0	108-1 0'			-RAILYARD FILL- (101-1)										
	108-2 1'	0.8	SW	Yellow-brown to brown well-graded SAND with thin lenses of granular material from railbed as in 108-1 -SAND FILL-			5	80	10	5				
2														
4														
6														
		7.0	SW	Gray-brown well-graded SAND -SAND FILL-										
8														
		8.5		Bottom of Excavation at 8.5 ft.										

Obstructions:

Remarks: Wet flowing sand at 5-6 ft. caused collapse of test pit.

Field Tests

Dilatancy		R - Rapid	S - Slow	N - None	
Toughness		L - Low	M - Medium	H - High	
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit
at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)
Pit Depth 8.5
Pit Length x Width 4.0 x 13.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP114

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 21 November 2000
Weather Clear
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:
Location: See Plan
Groundwater depths/entry rates (in./min.): Water slowly seeping at 3-4 ft.

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand				Field Test			
					% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0				-RAILYARD FILL- (See 101-1) with lenses of gray coarse coal ash										
		1.0		Light brown to brown well-graded medium SAND -SAND FILL-										
2														
4														
		5.5												
6														
	114-2 6.5'			Dark olive brown well-graded coarse to medium SAND, wet -SAND FILL-		10	30	30	20	5				
8														
		9.0		Bottom of Excavation at 9.0 ft.										

Obstructions:

Remarks: Moist sands flowed into pit from side walls, causing collapse of pit

Field Tests

Dilatancy	R - Rapid	S - Slow	N - None		
Toughness	L - Low	M - Medium	H - High		
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit
at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)
Pit Depth 9.0
Pit Length x Width 4.0 x 12.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP115

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 21 November 2000
Weather Clear
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:

Location: See Plan

Groundwater depths/entry rates (in./min.): Water entering pit rapidly at 1.0 ft. (from culvert)

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand				Field Test			
					% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0														
				-HETEROGENEOUS CLAY FILL-										
2				Note: A log platform (road) at 3.5 ft. block digging										
		3.5		Bottom of Excavation at 3.5 ft.										

Obstructions:

Remarks:

Field Tests

Dilatancy	R - Rapid	S - Slow	N - None		
Toughness	L - Low	M - Medium	H - High		
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit

at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)

Pit Depth 3.5
Pit Length x Width 4.0 x 8.0

NOTE: Soil Identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP116

Project	Union Branch Acquisition
Location	Portland, Maine
Client	Maine Department of Transportation
Contractor	Environmental Projects, Inc.
Equipment Used	Komatsu Excavator 0.75 Cubic Yard Bucket
File No.	80509-014
Date	21 November 2000
Weather	Clear
H&A Rep	J. Tewhey

Ground El.: ft
El. Datum:
Location: See Plan
Groundwater depths/entry rates (in./min.):

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				-RAILYARD FILL- (See 101-1)										
		0.5												
		1.0												
2				Olive brown to olive gray clayey SILT with sand and gravel, medium stiff and becomimg soft at depth -CLAYEY SILT FILL-	5	5	5	5	20	60				
4														
6														
8														
		9.5												
10			CL- ML	Native clay soils -MARINE DEPOSIT-										
12		12.0		Bottom of Excavation at 12.0 ft.										

Obstructions:

Remarks: Clayey silt collapsed into pit, but native clay soils did not.

Field Tests

Dilatancy	R - Rapid	S - Slow	N - None		
Toughness	L - Low	M - Medium	H - High		
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit

at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)

Pit Depth 12.0
Pit Length x Width 4.0 x 14.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP117

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 21 November 2000
Weather Clear
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:
Location: See Plan
Groundwater depths/entry rates (in./min.): Water entering pit slowly at 5.0 ft.

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand				Field Test			
					% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0	117-1 0.5'			-RAILYARD FILL- (See 101-1)										
		1.0												
2														
	117-2 3'			Light brown to brown poorly-graded sand, mps= 0.25 in. with wavy lenses of dark brown sand -SAND FILL-		5	10	80	5					
4														
		5.0												
6				Olive-gray clayey SILT with sand -CLAYEY SILT FILL-			5	5	30	60				
	117-3 7.5'													
8														
		9.5		Bottom of Excavation at 9.5 ft.										

Obstructions:

Remarks: Hole collapsed due to failure of clayey silt fill.

Field Tests

Dilatancy		R - Rapid	S - Slow	N - None	
Toughness		L - Low	M - Medium	H - High	
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit
at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)
Pit Depth 9.5
Pit Length x Width 4.0 x 11.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP118

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 21 November 2000
Weather Clear
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:
Location: See Plan
Groundwater depths/entry rates (in./min.): Water slowly seeping at 6.5 ft.

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand				Field Test			
					% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0				Brown sandy loam with organics and roots										
		0.5		-SILT FILL-										
2	118-1 2.5'			Olive-brown to olive-gray clayey SILT FILL, stiff, becomimg medium stiff to soft with depth -CLAYEY SILT FILL-										
4														
6														
		6.5		Olive-brown silty SAND, mps= 1.0 inch -SAND FILL-										
	118-2 7.5'													
8														
		8.5	SM	Black silty SAND	10	5	5	15	40	25				
		9.0		Bottom of Excavation at 9.0 ft.										

Obstructions:

Remarks: Clayey silt fill collapsed upon setting for a few minutes.

Field Tests

Dilatancy	R - Rapid	S - Slow	N - None		
Toughness	L - Low	M - Medium	H - High		
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit
at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)
Pit Depth 9.0
Pit Length x Width 4.0 x 12.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP119

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 21 November 2000
Weather Clear
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:

Location: See Plan

Groundwater depths/entry rates (in./min.): Water emerges from ash at 6.0 ft.

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand				Field Test			
					% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0														
		0.3												
	119-1 1'			Light brown to brown well-graded SAND, mps= 1.0 in.										
		1.5		-SAND FILL-										
2	119-2 2'			Gray coarse coal ash with lenses of black railroad yard soils and light brown sand (as in 119-1)										
		3.0		-ASH FILL-										
4														
	119-3 4.5'													
				Gray coarse coal ash with mixed trash, all stained jet black, glass, brick, ceramics, leather, metal, wood -ASH AND REFUSE FILL-										
6														
	119-4 7'													
8														
		9.5		Bottom of Excavation at 9.5 ft.										

Obstructions:

Remarks: Standing water in pit has prominent petroleum sheen; no petroleum odor (cold weather may inhibit odor)

Field Tests

Dilatancy	R - Rapid	S - Slow	N - None		
Toughness	L - Low	M - Medium	H - High		
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit

at depth	6.0	ft
measured after	0.25	hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)

Pit Depth 9.5
Pit Length x Width 4.0 x 14.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP120

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 21 November 2000
Weather Clear
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:

Location: See Plan

Groundwater depths/entry rates (in./min.): Water entering pit rapidly from 6-7 ft.

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	120-1 0'	0.5		Light brown poorly-graded SAND, mps= 0.25 in., grass, roots			10	80	5	5				
	120-2 1'			-RAILYARD FILL- (See 101-1)										
2		2.5												
4														
	120-3 5'			Gray coarse coal ash										
6				-ASH FILL-										
8		8.5												
				Bottom of Excavation at 8.5 ft.										

Obstructions:

Remarks: Slight petroleum sheen on standing water, no petroleum odor

Field Tests

Dilatancy	R - Rapid	S - Slow	N - None		
Toughness	L - Low	M - Medium	H - High		
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit
at depth 6.5 ft
measured after 0.25 hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)
Pit Depth 8.5
Pit Length x Width 4.0 x 13.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP121

Project	Union Branch Acquisition	**File No.**	80509-014
Location	Portland, Maine	**Date**	21 November 2000
Client	Maine Department of Transportation	**Weather**	Clear
Contractor	Environmental Projects, Inc.	**H&A Rep**	J. Tewhey
Equipment Used	Komatsu Excavator 0.75 Cubic Yard Bucket		

Ground El.: ft **El. Datum:**	**Location:** See Plan	**Groundwater depths/entry rates (in./min.):**

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand				Field Test			
					% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0				Brown silty GRAVEL with sand, grass, roots	40	15	10	10	10	15				
	121-1 1'			GRAVEL FILL-										
2	121-2 2'	2.0		-RAILYARD FILL- (See 101-1)										
		2.8				5	10	80	5					
4	121-3 4.5'			Light brown to brown well-graded SAND, mps= 0.25 in., wavy lenses of dark brown sand -SAND FILL-										
6														
	121-4 7'	7.0		Olive-gray calyey SILT with sand and gravel -CLAYEY SILT FILL- Note: Log platform at 8.0 ft.	5	5	5	5	20	60				
8		8.0		Bottom of Excavation at 8.0 ft.										

Obstructions: Wooden (log) platform or road at 8.0 ft. prevented more digging.

Remarks:

Field Tests

Dilatancy		R - Rapid	S - Slow	N - None	
Toughness		L - Low	M - Medium	H - High	
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit

at depth ft

measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)

Pit Depth 8.0

Pit Length x Width 4.0 x 11.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP122

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 21 November 2000
Weather Clear
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:
Location: See Plan
Groundwater depths/entry rates (in./min.): Water seeping slowly at 3.5 ft.

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	122-1 0.5'			-RAILYARD FILL- (See 101-1)										
2	122-2 2'	1.0		Olive-brown clayey SILT with sand and gravel -CLAYEY SILT FILL-										
4	122-3 4'	3.0		Olive-gray clayey SILT with sand and gravel (sand lenses shed water into pit) -CLAYEY SILT FILL-										
6 8	122-4 8'	6.0		Olive-gray to gray coarse SAND with silt, some ash and marine organics from former back cove bottom -SANDY MIXED FILL-										
10	122-5 10.5'	10.0	CL	Native clay deposits (See 107-4) -MARINE DEPOSIT-										
		11.5		Bottom of Excavation at 11.5 ft.										

Obstructions:

Remarks: Water draining from sand lense between clay layers at 3.5 ft.

Field Tests

Dilatancy	R - Rapid	S - Slow	N - None		
Toughness	L - Low	M - Medium	H - High		
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit
at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)
Pit Depth 11.5
Pit Length x Width 4.0 x 12.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP123

Project	Union Branch Acquisition	**File No.**	80509-014
Location	Portland, Maine	**Date**	21 November 2000
Client	Maine Department of Transportation	**Weather**	Clear
Contractor	Environmental Projects, Inc.	**H&A Rep**	J. Tewhey
Equipment Used	Komatsu Excavator 0.75 Cubic Yard Bucket		

Ground El.: ft
El. Datum:

Location: See Plan

Groundwater depths/entry rates (in./min.):

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	123-1 0'			-RAILYARD FILL- (See 101-1)										
	123-2 1'	1.0		Light brown well-graded SAND			5	80	10	5				
2	123-3 1.5'	1.5		Olive-brwon clayey SILT with sand and gravel, dry, stiff -CLAYEY SILT FILL-										
4	123-4 4'	2.5		Olive-gray clayey SILT with sand and gravel, wet, soft -CLAYEY SILT FILL-										
6 8	123-5 7'	6.0		Gray coarse coal ash -ASH FILL-										
10	123-6 9'	8.5		Gray coarse coal ash with trash; wood, ceramics, glass, leather, metal, brick -ASH AND REFUSE FILL-										
12	123-7 11'	11.0	CL	Native clay deposits (See 107-4) -MARINE DEPOSIT-										
		12.5		Bottom of Excavation at 12.5 ft.										

Obstructions:

Remarks:

Field Tests

Dilatancy	R - Rapid	S - Slow	N - None		
Toughness	L - Low	M - Medium	H - High		
Plasticity	N - Nonplastic	L - Low	M - Medium	H - High	
Dry Strength	N - None	L - Low	M - Medium	H - High	V - Very High

Standing Water in Completed Pit

at depth ft

measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)

Pit Depth 12.5

Pit Length x Width 4.0 x 14.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

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HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP124

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 21 November 2000
Weather Clear
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:
Location: See Plan
Groundwater depths/entry rates (in./min.):

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				-RAILYARD FILL- (See 101-1)										
		0.5		Yellow-brown to brown well-graded SAND with lenses of dark brown and gray sand -SAND FILL-										
2														
4														
		5.0	SW	Olive-gray to gray well-graded SAND -SAND FILL-										
6		6.0		Bottom of Excavation at 6.0 ft.										

Obstructions:

Remarks: Dry running sand cause collapse of pit

Field Tests
Dilatancy R - Rapid S - Slow N - None
Toughness L - Low M - Medium H - High
Plasticity N - Nonplastic L - Low M - Medium H - High
Dry Strength N - None L - Low M - Medium H - High V - Very High

Standing Water in Completed Pit
at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)
Pit Depth 6.0
Pit Length x Width 4.0 x 11.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP125

Project Union Branch Acquisition
Location Portland, Maine
Client Maine Department of Transportation
Contractor Environmental Projects, Inc.
Equipment Used Komatsu Excavator 0.75 Cubic Yard Bucket

File No. 80509-014
Date 21 November 2000
Weather Clear
H&A Rep J. Tewhey

Ground El.: ft
El. Datum:
Location: See Plan
Groundwater depths/entry rates (in./min.):

Depth (ft)	Sample ID	Stratum Change Depth (ft)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				-RAILYARD FILL-										
		0.5		Yellow brown to brown well-graded SAND with 3-4 in. thick lenses of black railyard fill -SAND FILL-										
2														
4														
6		6.0		Olive gray well-graded SAND -SAND FILL-										
		7.5		Bottom of Excavation at 7.5 ft.										

Obstructions:

Remarks: Dry running sands cause collapse of hole

Field Tests
Dilatancy R - Rapid S - Slow N - None
Toughness L - Low M - Medium H - High
Plasticity N - Nonplastic L - Low M - Medium H - High
Dry Strength N - None L - Low M - Medium H - High V - Very High

Standing Water in Completed Pit
at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12" to 24"		=
over 24"		=

Test Pit Dimensions (ft)
Pit Depth 7.5
Pit Length x Width 4.0 x 12.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

2000 Test Boring Logs for
Phase II Environmental Site Assessment
(see Reference 1)

HALEY & ALDRICH

TEST BORING REPORT

Boring No. B110

Project Union Branch Rail Line Property Portland, Maine
Client Maine Department of Transportation
Contractor Maine Test Borings, Inc.

File No. 80509-014
Sheet No. 1 of 1
Start 20 November 2000
Finish 20 November 2000
Driller D. McKeen
H&A Rep. K. Stephenson
Elevation
Datum
Location See Plan

	Casing	Sampler	Barrel
Type	HSA	S	-
Inside Diameter (in.)	4.25	1 3/8	-
Hammer Weight (lb.)		140	-
Hammer Fall (in.)		30	-

Drilling Equipment and Procedures
Rig Make & Model: Mobile B47 Bombardier
Bit Type:
Drill Mud:
Casing:
Hoist/Hammer: Winch/ Doughnut Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 5 11 25	S1 16"	0.0 2.0				Loose, black silty SAND with gravel, roots -BALLAST FILL-		20	20	20	10	30				
					0.4		Medium dense, black to brown medium to fine SAND, little coarse sand, damp -GRANULAR FILL-			30	45	20	5				
					1.0		Hard, gray-brown clayey SILT, little fine sand -CLAY FILL-					15	85				
	17 13 15 15	S2 4"	2.0 4.0				Hard, gray-brown clayey SILT with sand, probable gravel, dry Note: Water encountered at ~2.8 ft.				5	10	85				
5	2 4 5 5	S3 12"	4.0 6.0		4.0		Loose, brown SAND, wet -GRANULAR FILL-			5	65	30					
	1 3 6 6	S4 16"	6.0 8.0				Loose, gray-brown SAND, black streak ~7.0 ft., wet			10	50	40					
	5 4 2 3	S5 16"	8.0 10.0				Loose, gray-brown SAND, wet			5	65	30					
10	1 4 5 3	S6 24"	10.0 12.0		10.5	OL/ OH	Stiff, gray-brown organic SILT with shells -HARBOR BOTTOM DEPOSIT-					10	90				
					12.0		Bottom of Exploration at 12.0 ft. No refusal No elevated PID readings detected during drilling and sampling procedures.										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
11/20/00	1315	-	4.0	6.0	2.8

Sample Identification
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram
☐ Riser Pipe
▤ Screen
⬚ Filter Sand
▨ Cuttings
■ Grout
⬚ Concrete
▧ Bentonite Seal

Summary
Overburden (lin. ft.) 12.0
Rock Cored (lin. ft.) --
Samples 6S

Boring No. B110

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. B111

Project Union Branch Rail Line Property Portland, Maine
Client Maine Department of Transportation
Contractor Maine Test Borings, Inc.

File No. 80509-014
Sheet No. 1 of 1
Start 16 November 2000
Finish 17 November 2000
Driller D. McKeen
H&A Rep. K. Stephenson
Elevation
Datum
Location See Plan

	Casing	Sampler	Barrel
Type	HSA	S	-
Inside Diameter (in.)	4.25	1 3/8	-
Hammer Weight (lb.)		140	-
Hammer Fall (in.)		30	-

Drilling Equipment and Procedures
Rig Make & Model: Mobile B47 Bombardier
Bit Type:
Drill Mud:
Casing:
Hoist/Hammer: Winch/ Doughnut Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	1 4 11 10	S1 12"	0.0 2.0				Loose, dark brown to black silty SAND with cinder, roots										
					0.3		Loose, black silty SAND			10	20	60	10				
					0.6		Medium dense, gray-brown SAND with silt (damp 0-1.0 ft.)				10	80	10				
	4 5 6 8	S2 16"	2.0 4.0				Medium dense, gray-brown coarse to fine SAND, wet			15	25	50	10				
5	1 2 1 2	S3 12"	4.0 6.0				Loose, gray-brown SAND with silt (wet)		5		15	75	5				
	1 2 4 4	S4 13"	6.0 8.0				Similar to S3										
	1 2 2 2	S5 12"	8.0 10.0				Loose, gray SAND, black silty seam 9.8-9.9 ft., wet -GRANULAR FILL-										
10	1 4 3 2	S6 20"	10.0 12.0		10.5	OL/ OH	Medium stiff, gray sandy organic SILT, shells -HARBOR BOTTOM DEPOSIT-					90	10				
					11.8	CL	Soft, gray lean CLAY -MARINE DEPOSIT-					5	95				
					12.0		Bottom of Exploration at 12.0 ft. No refusal No elevated PID readings detected during drilling and sampling procedures.										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Depth (ft.) to: Bottom of Hole	Depth (ft.) to: Water

Sample Identification

O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram

▥	Riser Pipe
▤	Screen
░	Filter Sand
▨	Cuttings
▩	Grout
▦	Concrete
▧	Bentonite Seal

Summary

Overburden (lin. ft.)	12.0
Rock Cored (lin. ft.)	--
Samples	6S

Boring No. B111

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. B112

Project	Union Branch Rail Line Property Portland, Maine
Client	Maine Department of Transportation
Contractor	Maine Test Borings, Inc.

File No.	80509-014
Sheet No.	1 of 1
Start	17 November 2000
Finish	17 November 2000
Driller	D. McKeen
H&A Rep.	K. Stephenson
Elevation	
Datum	
Location	See Plan

	Casing	Sampler	Barrel
Type	HSA	S	-
Inside Diameter (in.)	4.25	1 3/8	-
Hammer Weight (lb.)		140	-
Hammer Fall (in.)		30	-

Drilling Equipment and Procedures

Rig Make & Model: Mobile B47 Bombardier
Bit Type:
Drill Mud:
Casing:
Hoist/Hammer: Winch/ Doughnut Hammer

Depth (ft.)	SPT*	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size**, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	5 7 10 23	S1 16"	0.0 2.0				Loose, black silty SAND, glass, roots, debris -DEBRIS FILL-				10	70	20				
					0.6		Medium dense, brown to light brown SAND, little silt -GRANULAR FILL-			20	50	20	10				
	20 13 11 6	S2 12"	2.0 4.0		1.8		Medium dense, gray-brown silty coarse to fine SAND, glass, trace clay (till fill)		5		10	65	20				
							Medium dense, gray silty coarse to fine SAND (damp)		5		15	60	20				
5	WOR WOH 1 2	S3 18"	4.0 6.0		4.0		Very soft, fine sandy SILT with clay, trace gravel and coarse to medium sand		5	10	10	25	50				
	WOH WOH 1 1	S4 12"	6.0 8.0				Similar to S3										
	WOR WOH 2 1	S5 22"	8.0 10.0				Very loose, gray silty SAND, little gravel and clay		10	10		50	30				
					9.4		Very soft, black fine sandy SILT with coal fragments										
10	1 1 2 2	S6 24"	10.0 12.0		9.9	OL/ OH	Very soft, dark gray organic SILT -HARBOR BOTTOM DEPOSIT-					10	90				
						CL	Soft, gray SILT to CLAY with sand, shells										
					12.0		Bottom of Exploration at 12.0 ft. No refusal No elevated PID readings detected during drilling and sampling procedures.										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Depth (ft.) to: Bottom of Hole	Depth (ft.) to: Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

☐	Riser Pipe
☐	Screen
⛆	Filter Sand
⛆	Cuttings
■	Grout
⛆	Concrete
▨	Bentonite Seal

Summary

Overburden (lin. ft.)	12.0
Rock Cored (lin. ft.)	--
Samples	6S

Boring No. B112

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per 6 in. **Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

2006 Test Boring Logs for
Proposed Bayside Parking Garage and Master Planning Study
(see References 2 and 3)

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-1

Project	Proposed Bayside Parking Garage & Master Planning Portland, Maine	File No.	33538-000
Client	Scott Simons Architects	Sheet No.	1 of 3
Contractor	Maine Test Borings, Inc.	Start	August 14, 2006
		Finish	August 15, 2006
		Driller	P. Hatch
		H&A Rep.	B. Steinert
		Elevation	9.0 +/-
		Datum	Portland City
		Location	See Plan

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	SS	NQ	Rig Make & Model: Mobile Drill / Truck
Inside Diameter (in.)	4.0	1.375	2.0	Bit Type: Roller Bit Drill Mud: None
Hammer Weight (lb.)	300	140	-	Casing: HW Drive 45 ft
Hammer Fall (in.)	30	30	-	Hoist/Hammer: Winch / Doughnut Hammer

Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0		S1	0.0	NO WELL INSTALLED			NOTE: S1 collected from ground surface. Fill placed for access road. -FILL-										
					2.0												
5	15 16 12 12	S2 6	5.0 7.0			SP	Medium dense, yellow brown, poorly graded SAND (SP), mps 4.75 mm, no odor, wet -FILL-	0	0	5	60	30	5				
10	7 6 3 5	S3 12	10.0 12.0			SP	Medium dense, gray, poorly graded SAND (SP), mps 4.75 mm, no odor, wet -FILL-	0	0	0	60	30	10				
					11.0	ML	Medium stiff, gray, sandy SILT (ML), mps 0.42 mm, bonded, organic odor, wet, shells throughout -HARBOR BOTTOM DEPOSIT-					20	80				
15	WOH 2 1 2	S4 24	15.0 17.0		15.0	CL	Soft, gray to olive-gray, sandy lean CLAY (CL), mps 0.42 mm, bonded, no odor, wet, layers of yellow-brown fine sand, mottled, trace organics -MARINE CLAY-					30	70				
					16.7	CL	Soft, gray, lean CLAY (CL), mps 0.075 mm, bonded, no odor, wet -MARINE CLAY-						100				
20							FV1 (20.4 - 21.0 ft), Su > 690 psf										
25																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Depth (ft.) to: Bottom of Hole	Depth (ft.) to: Water

Sample Identification

O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (lin. ft.)	40.4
Rock Cored (lin. ft.)	22.0
Samples	S8

Boring No. HA06-1

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-1
File No. 33538-000
Sheet No. 2 of 3

Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand				Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
25	WOR WOR WOH 1	S5 24	25.0 27.0			CL	Medium stiff, gray, lean CLAY (CL), mps 0.075 mm, bonded, no odor, wet, frequent black streaks -MARINE CLAY- FV2 (25.4 - 26.0 ft), Su = > 690 psf FV3 (26.3 - 27.0 ft), Su = 1010 psf / 340 psf						100				
30	WOR WOR 1 7	S6 24	30.0 32.0		31.0	CL	Soft, gray, lean CLAY (CL), mps 0.075 mm, bonded, no odor, wet, frequent black streaks, frequent fine sand seams at 31.0 ft -MARINE DEPOSIT- FV4 (30.4 - 31.0 ft), Su = 210 psf/150 psf FV5 (31.4 - 32.0 ft), Su > 690 psf										
35	WOR 3 5 6	S7 20	35.0 37.0		35.5	SP	Very loose to loose, gray, poorly graded SAND (SP), mps 2 mm, no structure, no odor, wet -MARINE SAND-	0	0	0	0	70	30				
					38.0		NOTE: Glacial till observed in drill cuttings from 38.0 to 39.8 ft -GLACIAL TILL-										
40	50 (0.4)	S8 0	40.0 42.0		39.8	BR	NOTE: Bedrock encountered at 39.8 ft. Advance roller bit to 40.4 ft. Begin NQ rock core at 40.4 ft. See Core Boring Report for details. NOTE: 1. FV1 (20.4 - 21.0 ft) indicates in-situ field vane performed at depth interval listed, corrected peak / residual shear strengths are provided. See Table II for details. 2. WOR = Weight of drill Rods; WOH = Weight of Hammer										

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA06-1

HALEY & ALDRICH

CORE BORING REPORT

Boring No. **HA06-1**
File No. 33538-000
Sheet No. 3 of 3

Depth (ft)	Drilling Rate Min./ft	Run No.	Depth (ft)	Recovery/RQD in.	Recovery/RQD %	Weathering	Well Diagram	Elev./Depth (ft)	Visual Description and Remarks
									SEE TEST BORING REPORT FOR OVERBURDEN DETAILS
									NOTE: Bedrock encountered at 39.8 ft. Advance roller bit to 40.4 ft. Begin NQ rock core at 40.4 ft.
40									
	6	C1	40.4 44.4	18/14	38/78	Fresh			Medium hard to hard, fresh to highly weathered, aphanitic to fine grained, gray, graphitic SCHIST. Primary joints dipping at horizontal to vertical angles, extremely close to moderately spaced, moderately wide, rough, stepped.
	2					High			
	1								
	3					Slight			
	7	C2	44.4 49.4	0/0	0/0	Comp			NOTE: No recovery
45									
	5								
	6								
	4								
	5								
50							NO WELL INSTALLED		NOTE: Roller cone through weathered bedrock from 49.9 to 52.2 ft.
	4	C3	52.2 57.8	67/17	100/28	Mod/ Slight			Very soft, slightly to moderately weathered, aphanitic, gray to black, graphitic SCHIST. Primary joints dipping at vertical angles parallel to foliation, extremely close to moderately spaced, partly open to moderately wide, undulating to stepped. Some calcite veins, occasional pitting, frequent pyrite seams.
	3								
	3								
55									
	3								
	3								
	3								Very soft to soft, slightly to moderately weathered, aphanitic, gray to black, graphitic SCHIST. Primary joints dipping at moderate to vertical angles (parallel to foliation), extremely close to moderately spaced, undulating to stepped, partly open to moderately wide, frequent calcite veins in upper half of run, occasional pitting, frequent pyrite seams.
	3	C4	57.8 62.4	55/14	100/44	Slight			
	2								
60									
	3								
	3								
								62.4	-BOTTOM OF EXPLORATION-

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-2

Project Proposed Bayside Parking Garage & Master Planning Portland, Maine
Client Scott Simons Architects
Contractor Maine Test Borings, Inc.

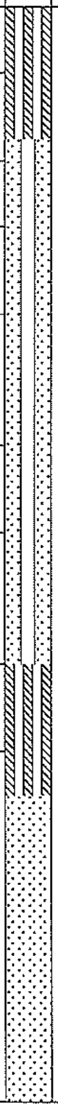
File No. 33538-000
Sheet No. 1 of 2
Start August 16, 2006
Finish August 17, 2006
Driller P. Hatch
H&A Rep. B. Steinert

Elevation 9.0 +/-
Datum Portland City
Location See Plan

	Casing	Sampler	Barrel
Type	HW	SS	-
Inside Diameter (in.)	4.0	1.375	-
Hammer Weight (lb.)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures

Rig Make & Model: Mobile Drill / Truck
Bit Type: Roller Bit
Drill Mud: None
Casing: HW Drive 40.0 ft
Hoist/Hammer: Winch / Doughnut Hammer



Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0							NOTE: Fill placed for access road -FILL-										
	13 31 36 23	S1 12	1.5 3.5		1.5	SP	Medium dense, yellow-brown to black, poorly graded SAND (SP), mps 4.75 mm, no structure, no odor, dry to moist -FILL-										
					2.0	CL	Hard, olive-gray, sandy lean CLAY (CL), mps 2.0 mm, bonded, mottled, no odor, dry, some reworked glacial till, reworked natural material -FILL-	0	0	0	5	10	85				
5	14 14 16 21	S3 10	5.0 7.0		5.0	SP	Medium dense, yellow-brown, poorly graded SAND (SP), mps 4.75 mm, no odor, wet -FILL-	0	0	5	80	10	5				
10	5 4 5 12	S3 16	10.0 12.0			SP	Medium dense, yellow-brown, poorly graded SAND (SP), mps 4.75 mm, no odor, wet -FILL-			20	70	5	5				
					11.3	ML	Stiff, gray, sandy SILT (ML), mps 0.42 mm, bonded, organic odor, wet, organics and shells throughout -HARBOR BOTTOM DEPOSIT-					15	85				
15	3 3 4 3	S4 24	15.0 17.0		15.0	CL	Medium stiff, olive-gray, lean CLAY (CL), mps 0.075 mm, bonded, mottled, no odor, wet -MARINE CLAY-						100				
					16.7	CL	Soft, gray, lean CLAY (CL), mps 0.075 mm, bonded, mottled, no odor, wet -MARINE CLAY-						100				
20							FV1 (20.3 - 21.0 ft), Su = 560 psf/170 psf										
25																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Depth (ft.) to: Bottom of Hole	Depth (ft.) to: Water
				.	

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

▯ Riser Pipe
▤ Screen
░ Filter Sand
▧ Cuttings
▓ Grout
▦ Concrete
▨ Bentonite Seal

Summary

Overburden (lin. ft.)	41.2
Rock Cored (lin. ft.)	0.0
Samples	S6

Boring No. HA06-2

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in.

[2] Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-2
File No. 33538-000
Sheet No. 2 of 2

Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
25	WOR WOR WOH WOH	S5 24	25.0 27.0			CL	Medium stiff, gray, lean CLAY (CL), mps 0.42 mm, bonded, no odor, wet, frequent black streaks, occasional fine sand seam -MARINE CLAY- FV2 (25.4 to 26.0 ft.), Su = 590 psf/120 psf						100				
30							FV3 (30.4 - 31.0 ft), Su = 600 psf/40 psf										
35	15 17 6 12	S5 4	35.0 37.0		34.5	SP	Medium dense, gray, poorly graded SAND (SP), mps 2.0 mm, no odor, wet -MARINE SAND-				5	90	5				
40	52 49 50 (0.2)	S6 0	40.0 42.0		40.0	BR	NOTE: No recovery. Split spoon refusal at 41.2 ft. -WEATHERED BEDROCK-										
45							NOTE: Rollercone refusal at 47.2 ft. BGS.										
					47.2		-BOTTOM OF EXPLORATION- NOTE: Observation well installed in completed borehole. See Well Installation Report for details. NOTE: 1. FV1 (20.4 - 21.0 ft) indicates in-situ field vane performed at depth interval listed, corrected peak / residual shear strengths are provided. See Table II for details. 2. WOR = Weight of drill Rods; WOH = Weight of Hammer.										

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA06-2

USCS_TB4 USCSLIB4.GLB USCSTB+CORE4.GDT G:\PROJECTS\33538\FIELD FORMS\33538-000.GPJ Sep 12, 06

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-3

Project Proposed Bayside Parking Garage & Master Planning Portland, Maine
Client Scott Simons Architects
Contractor Maine Test Borings, Inc.

File No. 33538-000
Sheet No. 1 of 2
Start August 9, 2006
Finish August 9, 2006
Driller T. Schaefer
H&A Rep. K. Stone
Elevation 9.0 +/-
Datum Portland City
Location See Plan

	Casing	Sampler	Barrel
Type	HW	SS	-
Inside Diameter (in.)	4.0	1.375	-
Hammer Weight (lb.)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures

Rig Make & Model: Mobile B-47 / Truck
Bit Type: Roller Bit
Drill Mud: None
Casing: HW Drive 30.0 ft
Hoist/Hammer: Winch / Doughnut Hammer

Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0																	
	18 23 18 20	S1 18	2.0 4.0			SP	Dense, black, poorly-graded SAND (SP), mps 0.75 in., no structure, slight odor, moist -FILL-		5		50	45					
5	6 5 3 6	S2 13	5.0 7.0			SP	Medium dense, dark gray, poorly-graded SAND (SP), mps 0.75 in., metal fragments present -FILL-				65	35					
					5.9	ML	Stiff, gray, sandy SILT (ML), mps 0.45 mm, numerous shell fragments present, no odor, moist -HARBOR BOTTOM DEPOSIT-					20	80				
10	5 7 4 5	S3 3	10.0 12.0	NO WELL INSTALLED		ML	Stiff, gray, sandy SILT (ML), mps 0.45 mm, numerous shell fragments present, no odor, moist -HARBOR BOTTOM DEPOSIT-					20	80				
	WOH 1 2 3	S4 24	12.0 14.0		12.0	CL	Soft, gray, lean CLAY (CL), mps 0.43 mm, wood fragments, organics present, numerous shells, frequent sand partings, no odor, wet -HARBOR BOTTOM DEPOSIT-										
15					15.3		FV1 (15.3 - 16.0 ft), Su = 1430 psf/410 psf										
20	WOR WOR WOR WOH	S5 24	20.0 22.0			CL	Soft, gray, lean CLAY (CL), mps 0.075 mm, occasional black streaks, wet -MARINE CLAY-						100				
25																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 42.0
Rock Cored (lin. ft.) -
Samples S7

Boring No. HA06-3

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-3
File No. 33538-000
Sheet No. 2 of 2

Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand				Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
25							FV2 (25.3 - 26.0 ft), Su = 430 psf/110 psf										
		U1 24	26.0 28.0														
							FV3 (28.3 - 29.0 ft), Su = 430 psf/100 psf										
30	WOR WOR WOR WOH	S6 24	30.0 32.0			CL	Soft, gray, lean CLAY (CL), mps 0.075 mm, some black staining, wet -MARINE CLAY-						100				
35							FV4 (35.3 - 36.0 ft), Su = 540 psf/120 psf										
					39.0												
40	9 12 15 23	S7 18	40.0 42.0			SM	Medium dense, gray, silty SAND (SM), mps 0.75 in., slightly bonded, wet -GLACIAL TILL-		10	15	35	20	20				
					42.0		-BOTTOM OF EXPLORATION- NOTE: 1. FV1 (20.4 - 21.0 ft) indicates in-situ field vane performed at depth interval listed, corrected peak / residual shear strengths are provided. See Table II for details. 2. WOR = Weight of drill Rods; WOH = Weight of Hammer.										

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA06-3

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-4

Project Proposed Bayside Parking Garage & Master Planning Portland, Maine
Client Scott Simons Architects
Contractor Maine Test Borings, Inc.

File No. 33538-000
Sheet No. 1 of 3
Start August 8, 2006
Finish August 8, 2006
Driller T. Schaefer
H&A Rep. K. Stone
Elevation 9.0 +/-
Datum Portland City
Location See Plan

	Casing	Sampler	Barrel
Type	NW	SS	NQ
Inside Diameter (in.)	3.0	1.375	2.0
Hammer Weight (lb.)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures

Rig Make & Model: Mobile Drill / Truck
Bit Type: Roller Bit
Drill Mud: None
Casing: NW Drive 48.0 ft
Hoist/Hammer: Winch / Doughnut Hammer

Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				NO WELL INSTALLED			-CONCRETE-										
					1.0												
	15 24 32 21	S1 18	2.0 4.0			SM	Very dense, dark gray, silty SAND with gravel (SM), mps 1.0 in., bonded, slight odor, dry -FILL-	5	15	10	10	45	15				
5	9 11 11 3	S2 4	5.0 7.0		5.0	CL	Stiff, gray, sandy lean CLAY (CL), mps 2.0 mm, no odor, wet -FILL-				15	10	75				
10	2 1 1 2	S3 2	10.0 12.0			CL	Very soft, gray, sandy lean CLAY (CL), mps 2.0 mm, no odor, wet -FILL-					25	75				
	4 4 5 8	S4 13	12.0 14.0			CL	Stiff, gray, sandy lean CLAY (CL), mps 2.0 mm, no odor, wet, brick and metal fragments present -FILL-				15	10	75				
					14.5												
15	4 4 5 8	S5 13	15.0 17.0			CL	Stiff, gray, lean CLAY (CL), mps 0.075 mm, no odor, wet -MARINE CLAY-						100				
20							FV1 (20.3 - 21.0 ft), Su = 860 psf/170 psf										
25																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
8/9/06	06:45	12.5	48.0	60.2	3.6

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.)	46.0
Rock Cored (lin. ft.)	14.2
Samples	S8

Boring No. HA06-4

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-4
File No. 33538-000
Sheet No. 2 of 3

Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand				Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
25	WOR WOR WOR WOR	S6 24	25.0 27.0			CL	Soft, gray, lean CLAY (CL), mps 0.43 mm, occasional sand partings, wet -MARINE CLAY-						100				
30							FV2 (30.3 - 31.0 ft), Su = 450 psf/170 psf										
35							FV3 (35.3 - 36.0 ft), Su = 490 psf/130 psf										
40	WOR WOR WOR WOR	S7 24	40.0 42.0			CL	Medium stiff, gray, lean CLAY (CL), mps 0.45 mm, occasional sand layers, wet - MARINE CLAY-						100				
					42.0		FV4 (40.3 - 41.0 ft), Su = 570 psf/130 psf -GLACIAL TILL-										
45					45.0	BR	-WEATHERED BEDROCK-										
	50 (.2)	S8	45.5 45.7		46.0		NOTE: Bedrock encountered at 45.0 ft. Advance roller bit to 46.0 ft. Begin NQ rock core at 46.0 ft. See Core Boring Report for details. NOTE: 1. FV1 (20.4 - 21.0 ft) indicates in-situ field vane performed at depth interval listed, corrected peak / residual shear strengths are provided. See Table II for details. 2. WOR = Weight of drill Rods; WOH = Weight of Hammer.										

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[1] SPT = Sampler blows per 6 in. [2] Maximum particle size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA06-4

HALEY & ALDRICH

CORE BORING REPORT

Boring No. HA06-4
File No. 33538-000
Sheet No. 3 of 3

Depth (ft)	Drilling Rate Min./ft	Run No.	Depth (ft)	Recovery/RQD in.	Recovery/RQD %	Weath-ering	Well Dia-gram	Elev./ Depth (ft)	Visual Description and Remarks
45									SEE TEST BORING REPORT FOR OVERBURDEN DETAILS
									NOTE: Bedrock encountered at 45.0 ft. Advance roller bit to 46.0 ft. Begin NQ rock core at 46.0 ft.
	3	C1	46.0 50.4	24/0	45/0	Weathered	NO WELL INSTALLED	46.0	Very soft to soft, gray, highly weathered, aphanitic to fine grained PHYLLITE. Joints dipping moderate to high, extremely close to very close, planar and smooth to rough, open, occasional pits, quartz intrusion.
	4								
	2								
	2								
50	2	C2	50.4 55.4	34/0	56/0	Weathered			Very soft to soft, gray, highly weathered, aphanitic to fine grained PHYLLITE. Joints dipping moderate to high, extremely close to very close, planar and smooth to rough, open, occasional pits, no quartz, occasional calcite veins.
	2								
	4								
	2								
	2								Very soft to soft, greenish-gray, moderately weathered, aphanitic to fine grained PHYLLITE, joints dipping moderate to high angle, very close, partly open to open, occasional calcite veins, 2 in. quartz intrusion, pyrite and staurolite present.
55	2	C3	55.4 60.2	48/5	86/10	Weathered			
	2								
	2								
	2								
	4								
60	5							60.2	-BOTTOM OF EXPLORATION-

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-5

Project Proposed Bayside Parking Garage & Master Planning Portland, Maine
Client Scott Simons Architects
Contractor Maine Test Borings, Inc.

File No. 33538-000
Sheet No. 1 of 2
Start August 10, 2006
Finish August 11, 2006
Driller T. Schaefer
H&A Rep. B. Steinert
Elevation 10.0 +/-
Datum Portland City
Location See Plan

	Casing	Sampler	Barrel
Type	HW	SS	-
Inside Diameter (in.)	4.0	1.375	-
Hammer Weight (lb.)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures
Rig Make & Model: Mobile Drill / Truck
Bit Type: Roller Bit
Drill Mud: None
Casing: HW Drive 20.0 ft
Hoist/Hammer: Winch / Doughnut Hammer

Depth (ft.)	SPT¹	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size², structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel		Sand				Field Test			
								% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0				NO WELL INSTALLED	0.3		-BITUMINOUS CONCRETE-										
	6 11 9 13	S1 14	2.0 4.0			SP	Medium dense, yellow-brown, poorly graded SAND (SP), mps 2 mm, no odor, moist -FILL-	0	0	0	15	80	5				
					3.0	SP	Medium dense, gray-brown, poorly graded SAND (SP), mps 2.0 mm, fuel like odor, moist -FILL-	0	0	0	40	50	10				
5	3 3 3 3	S2 15	5.0 7.0		4.0	SC	Medium stiff, gray, clayey SAND with gravel (SC), mps 1.5 in., bonded, no odor, wet, reworked glacial till -FILL-	10	5	5	15	30	35				
10	3 2 2 3	S3 18	10.0 12.0			SC	Soft, black to gray, clayey SAND (SC), mps 4.75 mm, bonded, slight organic odor, wet, trace shells, trace coal, wood fragments present, reworked natural material -FILL-			5	10	25	60				
					14.0												
15	2 4 4 6	S4 20	15.0 17.0			CL	Medium stiff, olive-gray to gray, lean CLAY (CL), mps 0.075 mm, bonded, mottling becomes less frequent with depth, no odor, wet, some black streaks in lower portion of spoon -MARINE CLAY-						100				
20							FV1 (20.4 - 21.0 ft), Su > 690 psf FV2 (21.3 - 22.0 ft), Su = 920 psf / 240 psf										
					23.0												
25																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
8/11/06	12:20	0	-	44.5	10.9

Sample Identification
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram
◫ Riser Pipe
▤ Screen
⛶ Filter Sand
▦ Cuttings
▩ Grout
▨ Concrete
▧ Bentonite Seal

Summary
Overburden (lin. ft.) 52.2
Rock Cored (lin. ft.) -
Samples S7

Boring No. HA06-5

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

¹SPT = Sampler blows per 6 in. ²Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-5
File No. 33538-000
Sheet No. 2 of 2

Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
25	WOR WOR WOR WOH	S5 24	25.0 27.0			CL	Very soft, gray, lean CLAY (CL), mps 0.075 mm, bonded, no odor, wet, frequent black streaks -MARINE CLAY-						100				
30							FV3 (30.4 - 31.0 ft), Su = 580 psf / 130 psf										
35	WOR WOR WOR WOH	S6 24	35.0 37.0			CL	Medium stiff, gray, lean CLAY (CL), mps 0.075 mm, bonded, no odor, wet, some black streaks, increased percentage of fine sand -MARINE CLAY-					10	90				
40							FV4 (40.4 - 41.0 ft), Su = 640 psf / 50 psf										
					43.5												
45	9 19 15 9	S7 12	45.0 47.0			SC	Dense, gray, clayey SAND with gravel (SC), mps 1.5 in., bonded, no odor, wet, some black weathered rock fragments -GLACIAL TILL-		15	5	25	20	35				
					47.5		-WEATHERED BEDROCK-										
50							NOTE: Rollercone refusal at 52.2 ft										
					52.2		-BOTTOM OF EXPLORATION- NOTE: 1. FV1 (20.4 - 21.0 ft) indicates in-situ field vane performed at depth interval listed, corrected peak / residual shear strengths are provided. See Table II for details. 2. WOR = Weight of drill Rods; WOH = Weight of Hammer.										

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA06-5

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-6

Project Proposed Bayside Parking Garage & Master Planning Portland, Maine
Client Scott Simons Architects
Contractor Maine Test Borings, Inc.

File No. 33538-000
Sheet No. 1 of 2
Start August 15, 2006
Finish August 15, 2006
Driller P. Hatch
H&A Rep. B. Steinert
Elevation 10.0 +/-
Datum Portland City
Location See Plan

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	SS	-	Rig Make & Model: Mobile Drill / Truck
Inside Diameter (in.)	4.0	1.375	-	Bit Type: Roller Bit Drill Mud: None
Hammer Weight (lb.)	300	140	-	Casing: HW Drive 40 ft
Hammer Fall (in.)	30	30	-	Hoist/Hammer: Winch / Doughnut Hammer

Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				NO WELL INSTALLED			-BITUMINOUS CONCRETE-										
	13 25 29 31	S1 10	0.4 2.4		0.4	SW	Very dense, brown, well graded SAND with gravel (SW), mps 1 in., no odor, dry to moist, some faint black staining -FILL-	0	20	20	40	15	5				
					3.2												
5	WOH 3 3 13	S2 5	5.0 7.0			CL	Medium stiff, brown to gray, sandy lean CLAY (CL), mps 2.0 mm, slightly bonded, no odor, moist to wet, reworked natural material -FILL-				15	25	60				
10	2 1 4 2	S3 15	10.0 12.0			CL	Medium stiff, brown to gray, sandy lean CLAY (CL), mps 2.0 mm, slightly bonded, no odor, moist to wet, reworked natural material -FILL-				15	25	60				
					10.5	ML	Very soft, black, SILT (ML), mps 0.42 mm, bonded, organic odor, wet, trace organics, shading to gray with depth -HARBOR BOTTOM DEPOSIT-					5	95				
					13.5												
15	50 (0.2)	S4 0	15.0 16.0				NOTE: Split spoon refusal at 15.2 ft on obstruction										
	71 40 30 32	S5 0	16.0 18.0				NOTE: No recovery, gray clay observed on spoon -MARINE CLAY-										
20	WOR WOR WOR WOH	S6 24	20.0 22.0			CL	Medium stiff, gray, lean CLAY (CL), mps 0.075 mm, bonded, no odor, wet, occasional black streaks -MARINE CLAY- NOTE: FV1 (21.3 - 22.0 ft), Su = 620 psf / 260 psf						100				
25																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Depth (ft.) to: Bottom of Hole	Depth (ft.) to: Water

Sample Identification

O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram

◫	Riser Pipe
▤	Screen
⛆	Filter Sand
▦	Cuttings
▩	Grout
▧	Concrete
▨	Bentonite Seal

Summary

Overburden (lin. ft.) 41.5
Rock Cored (lin. ft.) 0.0
Samples S8

Boring No. HA06-6

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-6
File No. 33538-000
Sheet No. 2 of 2

Depth (ft.)	SPT¹	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size², structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
25	WOR WOR WOH WOH	S7 24	25.0 27.0			CL	Medium stiff, gray, lean CLAY (CL), mps 0.075 mm, bonded, no odor, wet, frequent black streaks starting at 26.0 ft						100				
					26.0		-MARINE CLAY- NOTE: FV2 (25.4 - 26.0 ft), Su = 530 psf / 390 psf										
30							FV3 (30.4 - 31.0 ft), Su > 690 psf / 150 psf										
35							FV4 (36.4 - 37.0 ft), Su = 260 psf / 130 psf FV5 (37.4 - 38.0 ft), Su = 690 psf / 150 psf										
40	5 4 50 (0.3)	S8 5	40.0 42.0		40.5	SP	Loose, gray, poorly graded SAND (SP), mps 2 mm, no odor, wet				5	90	5				
							-MARINE SAND-										
					41.3	BR	-WEATHERED BEDROCK-										
					41.5		-BOTTOM OF EXPLORATION-										

NOTE:
1. FV1 (20.4 - 21.0 ft) indicates in-situ field vane performed at depth interval listed, corrected peak / residual shear strengths are provided. See Table II for details.
2. WOR = Weight of drill Rods; WOH = Weight of Hammer.

¹SPT = Sampler blows per 6 in.²Maximum particle size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA06-6

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HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-7

Project	Proposed Bayside Parking Garage & Master Planning Portland, Maine	File No.	33538-000
Client	Scott Simons Architects	Sheet No.	1 of 3
Contractor	Maine Test Borings, Inc.	Start	7 August 2006
		Finish	8 August 2006
		Driller	T. Schaefer
		H&A Rep.	K. Stone
		Elevation	10.5 +/-
		Datum	Portland City
		Location	See Plan

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NW	SS	-	Rig Make & Model: Mobile Drill / Truck
Inside Diameter (in.)	3.0	1.375	-	Bit Type: Roller Bit Drill Mud: None
Hammer Weight (lb.)	300	140	-	Casing: NW Drive 65.0 ft
Hammer Fall (in.)	30	30	-	Hoist/Hammer: Winch / Doughnut Hammer

Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	10 11 10 18	S1 12	0.0 2.0	NO WELL INSTALLED		SM	Medium dense, dark brown, silty SAND with gravel (SM), mps 1.1 in., no odor, dry -FILL-		15	10	25	35	15				
5	6 8 7 3	S2 8	5.0 7.0			SW	Medium dense, brown, well-graded SAND with gravel (SW), mps 1.0 in., no odor, moist -FILL-		15	25	35	30					
10	9 4 5 8	S3 0	10.0 12.0				NOTE: No recovery, small piece of wood in tip of spoon. Sheen observed in wash water from 10.0 to 13.0 ft -FILL-										
					13.0												
15	7 10 13 21	S4 22	15.0 17.0			CL	Hard, olive-brown to gray, lean CLAY (CL), mps 0.42 mm, mottled, occasional fine sand and silt partings, no odor, wet -MARINE CLAY-						100				
20	3 4 6 5	S5 22	20.0 22.0			CL	Stiff, gray, lean CLAY (CL), mps 0.075 mm, no odor, wet, frequent black streaks -MARINE CLAY- FV1 (20.3 - 21.0 ft), Su = 1680 psf						100				
25																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Depth (ft.) to: Bottom of Hole	Depth (ft.) to: Water
8/8/06	06:30	12.5	60.0	62.0	14.1

Sample Identification

O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram

◫	Riser Pipe
▤	Screen
⁘	Filter Sand
▦	Cuttings
■	Grout
▲	Concrete
▨	Bentonite Seal

Summary

Overburden (lin. ft.)	67.0
Rock Cored (lin. ft.)	-
Samples	S10

Boring No. HA06-7

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. HA06-7
File No. 33538-000
Sheet No. 2 of 3

Depth (ft.)	SPT¹	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size², structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
25							FV2 (25.3 - 26.0 ft), Su = 840 psf / 270 psf										
30	WOR WOR WOH WOH	S6 24	30.0 32.0			CL	Medium stiff, lean CLAY (CL), mps 0.075 mm, wet, frequent black streaks -MARINE CLAY-						100				
35							FV3 (35.3 - 36.0 ft), Su = 590 psf / 110 psf										
40	WOR WOR WOR WOR	S7 24	40.0 42.0			CL	Medium stiff, lean CLAY (CL), mps 0.075 mm, wet, with frequent black streaks -MARINE CLAY-						100				
45							FV4 (40.3 - 41.0 ft), Su = 580 psf / 170 psf										
50	WOR WOR WOR WOR	S8 24	50.0 52.0			CL	Medium stiff, lean CLAY (CL), mps 0.075 mm, wet, with frequent black streaks -MARINE CLAY-						100				
55							FV5 (56.0 - 56.7 ft), Su = 860 psf										
60	WOR WOR WOR WOR	S9 24	60.0 62.0			CL	Medium stiff, lean CLAY (CL), mps 2.0 mm, wet, trace sand -MARINE CLAY-						100				

¹SPT = Sampler blows per 6 in. ²Maximum particle size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA06-7

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-7
File No. 33538-000
Sheet No. 3 of 3

								Gravel		Sand				Field Test			
Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
					64.0												
65	11 32 20 20	S10 15	65.0 67.0			SM	Very dense, gray, silty SAND (SM), mps 0.75 in., bonded, no odor, wet -GLACIAL TILL-		20	10	10	45	15				
					67.0		-BOTTOM OF EXPLORATION- NOTE: 1. FV1 (20.4 - 21.0 ft) indicates in-situ field vane performed at depth interval listed, corrected peak / residual shear strengths are provided. See Table II for details. 2. WOR = Weight of drill Rods; WOH = Weight of Hammer.										

USCS_TB4 USCSLIB4.GLB USCSTB+CORE4.GDT G:\PROJECTS\33538\FIELD FORMS\33538-000.GPJ 17 Oct 08

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA06-7

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-8

Project	Proposed Bayside Parking Garage & Master Planning Portland, Maine
Client	Scott Simons Architects
Contractor	Maine Test Borings, Inc.

File No.	33538-000
Sheet No.	1 of 2
Start	10 August 2006
Finish	10 August 2006
Driller	T. Schaefer
H&A Rep.	B. Steinert
Elevation	12.0 +/-
Datum	Portland City
Location	See Plan

	Casing	Sampler	Barrel
Type	NW	SS	-
Inside Diameter (in.)	3.0	1.375	-
Hammer Weight (lb.)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures

Rig Make & Model: Mobile Drill / Truck
Bit Type: Roller Bit
Drill Mud: None
Casing: NW Drive 25.0 ft
Hoist/Hammer: Winch / Doughnut Hammer

Depth (ft.)	SPT^1	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size^2, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	15 28 32 23	S1 12	0.0 2.0	NO WELL INSTALLED		SP-SM	Very dense, dark brown to black, poorly graded SAND with gravel (SP-SM), mps 1 in., hydrocarbon odor, moist, coal and wood fragments present -FILL-	20	10	10	40	10	10				
							NOTE: Similar material to above observed in auger cuttings from 0.0 to 5.0 ft										
5	52 52 42 28	S2 8	5.0 7.0			SW-SM	Very dense, dark brown to black, well graded SAND with silt (SW-SM), mps 4.75 mm, slight hydrocarbon odor, moist, trace coal and brick fragments -FILL-	0	0	10	50	30	10				
					5.3	SP	Medium dense to dense, yellow-brown, poorly graded SAND (SP), mps 2.0 mm, no odor, moist, wood stuck in tip of spoon -FILL-	0	0	0	15	80	5				
10	2 6 6 8	S3 12	10.0 12.0			SM	Very loose, yellow-brown to brown, silty SAND (SM), mps 4.75 mm, no odor, wet, trace wood fragments -FILL-	0	0	15	50	20	15				
					10.5	SM	Medium dense, dark brown to gray, silty SAND (SM), mps 4.75 mm, no odor, wet, some reworked natural material -FILL-	0	0	20	45	20	15				
15	4 7 8 11	S4 20	15.0 17.0		14.0	CL	Stiff, olive-gray, lean CLAY (CL), mps 0.075 mm, bonded, mottled, no odor, moist to wet -MARINE CLAY-						100				
20	WOH WOH 1 3	S5 24	20.0 22.0		17.0	CL	Very soft, gray, lean CLAY (CL), mps 1 in., bonded, no odor, wet, frequent black streaks -MARINE CLAY-						100				
25																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Depth (ft.) to: Bottom of Hole	Depth (ft.) to: Water
8/10/06	11:00	0	-	9.1	6.8

Sample Identification

O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram

◫	Riser Pipe
▤	Screen
⁘	Filter Sand
▦	Cuttings
■	Grout
▩	Concrete
▧	Bentonite Seal

Summary

Overburden (lin. ft.)	54.0
Rock Cored (lin. ft.)	0.0
Samples	S10

Boring No. HA06-8

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-8
File No. 33538-000
Sheet No. 2 of 2

								Gravel		Sand				Field Test			
Depth (ft.)	SPT¹	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size², structure, odor, moisture, optional descriptions, geologic interpretation)	% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
25	WOR WOR WOR WOR	S6 24	25.0 27.0			CL	Very soft, gray, lean CLAY (CL), mps 0.42 mm, bonded, no odor, wet, frequent black streaks and fine sand partings, trace shells -MARINE CLAY-					10	90				
30	WOR WOR WOR WOR	S7 24	30.0 32.0		30.3	CL	Very soft, gray, lean CLAY (CL), mps 0.075 mm, bonded, no odor, wet, trace shells, black streaks/specs become less frequent with depth -MARINE CLAY-						100				
40	WOR WOR WOR WOH	S8 24	40.0 42.0			CL	Very soft, gray, lean CLAY (CL), mps 0.075 mm, bonded, no odor, wet, trace fine sand -MARINE CLAY-						100				
50	3 18 26 22	S9 12	50.0 52.0		50.2	SW-SM	Dense, gray, well graded SAND with silt (SW-SM), mps 4.75 mm, bonded, no odor, wet -GLACIAL TILL-	0	0	30	40	20	10				
	38 40 52 55	S10 12	52.0 54.0		51.8	BR	-WEATHERED BEDROCK-										
					54.0		-BOTTOM OF EXPLORATION-										

¹SPT = Sampler blows per 6 in. ²Maximum particle size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA06-8

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA06-9

Project	Proposed Bayside Parking Garage & Master Planning Portland, Maine
Client	Scott Simons Architects
Contractor	Maine Test Borings, Inc.

File No.	33538-000
Sheet No.	1 of 2
Start	10 August 2006
Finish	10 August 2006
Driller	T. Schaefer
H&A Rep.	B. Steinert
Elevation	9.5 +/-
Datum	Portland City
Location	See Plan

	Casing	Sampler	Barrel
Type	HW	SS	-
Inside Diameter (in.)	4.0	1.375	-
Hammer Weight (lb.)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures

Rig Make & Model: Mobile Drill / Truck

Bit Type: Roller Bit

Drill Mud: None

Casing: HW Drive 20.0 ft

Hoist/Hammer: Winch / Doughnut Hammer

Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	10 10 13 14	S1 20	0.0 2.0	NO WELL INSTALLED		SP	Medium dense, brown to black, poorly graded SAND (SP), mps 4.75 mm, no odor, dry, wood fragments present -FILL-	0	0	20	65	10	5				
					1.7	SP	Medium dense, yellow-brown, poorly graded SAND (SP), mps 2mm, no odor, dry -FILL-	0	0	0	15	80	5				
5	2 2 5 5	S2 16	5.0 7.0			SP	Loose, yellow-brown, poorly graded SAND (SP), mps 2 mm, no odor, moist, trace organics -FILL-				15	80	5				
					6.0	SP	Medium dense, brown, poorly graded SAND (SP), mps 2 mm, no odor, wet, trace wood -FILL-				5	90	5				
10	2 2 3 6	S3 12	10.0 12.0		10.2	CL	Medium stiff to stiff, gray, sandy lean CLAY (CL), mps 0.42 mm, bonded, slight organic odor, moist to wet, shells throughout -MARINE DEPOSIT-					40	60				
					14.0												
15	3 3 4 2	S4 15	15.0 17.0			CL	Medium stiff, olive-gray, lean CLAY (CL), mps 0.075 mm, bonded, no odor, wet, slightly mottled -MARINE DEPOSIT-						100				
					16.0	CL	Medium stiff, gray, sandy lean CLAY (CL), mps 0.42 mm, bonded, no odor, wet -MARINE DEPOSIT-					30	70				
20							FV1 (20.4 - 21.0 ft), Su = 560 psf / 110 psf										
25																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water
8/10/06	12:15	-	10.0	10.0	4.0
8/10/06	16:00	-	-	-	3.8

Sample Identification

O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon
G	Geoprobe

Well Diagram

▯	Riser Pipe
▤	Screen
⁘	Filter Sand
▨	Cuttings
■	Grout
▲	Concrete
▧	Bentonite Seal

Summary

Overburden (lin. ft.)	42.7
Rock Cored (lin. ft.)	0.0
Samples	S8

Boring No. HA06-9

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in.

[2] Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. HA06-9
File No. 33538-000
Sheet No. 2 of 2

Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
25	WOR WOR WOR WOH	S5 24	25.0 27.0			CL	Medium stiff, gray, lean CLAY (CL), mps 0.075 mm, bonded, no odor, wet, black streaks -MARINE CLAY-						100				
30							FV2 (30.4 - 31.0 ft), Su = 640 psf / 130 psf										
35	WOR WOR WOR WOH	S6 24	35.0 37.0			CL	Medium stiff, gray, sandy lean CLAY (CL), mps 0.42 mm, bonded, no odor, wet, frequent fine sand seams -MARINE DEPOSIT-					30	70				
					38.0												
40	6 5 5 22	S7 14	40.0 42.0			SC	Medium dense, gray, clayey SAND (SC), mps 4.75 mm, bonded, no odor, wet -GLACIAL TILL-	0	0	5	20	40	35				
	92 50 (0.2)	S8 8	42.0 44.0		41.5	BR	-WEATHERED BEDROCK-										
					42.7		-BOTTOM OF EXPLORATION-										

NOTE:
1. FV1 (20.4 - 21.0 ft) indicates in-situ field vane performed at depth interval listed, corrected peak / residual shear strengths are provided. See Table II for details.
2. WOR = Weight of drill Rods; WOH = Weight of Hammer.

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[1] SPT = Sampler blows per 6 in. [2] Maximum particle size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

2008 Test Boring Logs for
Proposed MaineHealth/United Way Development
(see Reference 4)

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA08-1

Project Maine Health/United Way Development, Portland, Maine
Client Maine Medical Center
Contractor Maine Test Borings, Inc.

File No. 35611-000
Sheet No. 1 of 4
Start 8 August 2008
Finish 12 August 2008
Driller M. Porter
H&A Rep. O. Lawlor
Elevation 11.5 +/-
Datum Portland City Datum
Location See Plan

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NW	S	--	Rig Make & Model: Mobile Drill B-50 Bombardier
Inside Diameter (in.)	3.0	1 3/8	--	Bit Type: Roller Bit Drill Mud: None
Hammer Weight (lb)	300	140	-	Casing: NW drive to 102.0 ft.
Hammer Fall (in.)	30	30	-	Hoist/Hammer: Winch Doughnut Hammer PID Make & Model:

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				0.1		-Bituminous Concrete-										
	20 50 23 26	S1 16	1.0 3.0		GW	Very dense, gray, well-graded GRAVEL (GW), mps 1-3/8 in., no structure, no odor, wet, intermixed with 15% concrete -FILL-	35	35	10	10	10					
	5 8 100	S2 19	3.0 4.5	3.0	SM	Very dense, dark gray, silty SAND (SM), mps 1-3/8 in., no structure, no odor, moist, intermixed with 10% concrete and ash -FILL-	5	5	30	30	15	15				
5	18 13 8 6	S3 22	5.0 7.0		SM	Medium dense, dark gray, silty SAND (SM), mps 1-3/8 in., no structure, no odor, moist -FILL-	5	5	30	30	15	15				
	7 4 2 2	S4 11	7.0 9.0		SM	Loose, dark gray, silty SAND (SM), mps 1-3/8 in., no structure, no odor, wet -FILL-	5	5	30	30	15	15				
				9.0												
10	2 1 3 3	S5 7	10.0 12.0		OL/ OH	Loose, gray, sandy ORGANIC SILT (OL/OH), trace shells, mps 2.0 mm, no structure, organic odor, wet -HARBOR BOTTOM DEPOSIT-					15	85				
	28 12 11 10	S6 9	12.0 14.0		OL/ OH	Medium dense, gray, sandy ORGANIC SILT (OL/OH), trace shells, mps 2.0 mm, no structure, petroleum-like odor, wet, frequent sand partings					15	85				
				14.5												
15	7 11 18 21	S7 24	15.0 17.0		CL	Very stiff, olive-gray, silty lean CLAY (CL), mps 2.0 mm, brown mottling, no structure, no odor, moist -GLACIOMARINE DEPOSIT-						100	N	L	L	
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Depth (ft) to: Bottom of Hole	Depth (ft) to: Water
8/12/08	1148		99.0	101.7	19.1
8/12/08	1230		-	76.0	7.1

Sample ID

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram

▯ Riser Pipe
▤ Screen
⁘ Filter Sand
▨ Cuttings
■ Grout
∴ Concrete
▧ Bentonite Seal

Summary

Overburden (ft) 98.5
Rock Cored (ft) 0
Samples 18S

Boring No. HA08-1

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Plasticity**: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. HA08-1
File No. 35611-000
Sheet No. 2 of 4

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand				Field Test			
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20																
25	WOH WOH WOH WOH	S8 24	25.0 27.0		CL	Medium stiff, gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, moist FV1 (25.3-26.0 ft), Su = 900/250 psf -GLACIOMARINE DEPOSIT-						100	N	L	L	
30																
35	WOR WOR WOH WOH	S9 21	35.0 37.0		CL	Medium stiff, dark gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, wet FV2 (35.3-36.0 ft), Su = 650/330 psf -GLACIOMARINE DEPOSIT-						100	N	L	L	
40																
45	WOR WOR WOR WOR	S10 24	45.0 47.0		CL	Very soft, dark gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, wet FV3 (45.3-46.0 ft), Su = 204/120 psf -GLACIOMARINE DEPOSIT-						100	N	L	L	

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. HA08-1
File No. 35611-000
Sheet No. 3 of 4

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
50						Note: Trace of sand and gravel observed in wash water.										
55																
	WOR WOR WOR WOR	NR	56.0 58.0			Note: No recovery, probable gravel or cobble pushed by spoon tip. FV4 (56.3-57.0 ft), Su = 1220/530 psf										
60	WOR WOR WOR WOR	S11 24	60.0 62.0		CL	Very soft, dark gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, wet, frequent fine sand seams -GLACIOMARINE DEPOSIT-					5	95	N	L	L	
65	5 1 3 10	S12 14	65.0 67.0	65.0	SC/SM	Very loose, gray, clayey SAND to silty SAND (SC/SM), mps 0.25 in., no structure, no odor, wet -GLACIOMARINE DEPOSIT-		5	15	20	45	15				
				69.0												
70	23 24 31 43	S13 24	70.0 72.0		SM	Very dense, gray, silty SAND with gravel (SM), mps 0.25 in., bonded, no odor, moist -GLACIAL TILL-		10	20	25	30	15				
75	44 76 81 100/4"	S14 15	75.0 77.0		SM	Very dense, gray, silty SAND with gravel (SM), mps 0.25 in., bonded, no odor, moist -GLACIAL TILL-	5	5	20	25	30	15				

NOTE: Soil Identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. HA08-1
File No. 35611-000
Sheet No. 4 of 4

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
80	50 44 56 65	S15 19	80.0 82.0		SM	Very dense, gray, silty SAND (SM), mps 0.25 in., bonded, no odor, moist -GLACIAL TILL-	5	5	20	25	30	15				
85	57 87 102 90	S16 18	85.0 87.0		SM	Very dense, gray, silty SAND (SM), mps 0.25 in., bonded, no odor, moist -GLACIAL TILL-	5	5	20	25	30	15				
90	8 21 62 87	S17 18	90.0 92.0		SM	Very dense, gray, silty SAND (SM), mps 0.25 in., bonded, no odor, moist, occasional pockets of sandy SILT -GLACIAL TILL-	5	5	20	25	30	15				
95																
				98.5												
100	34 48 71 146	S18 14	100.0 102.0		BR	Highly weathered SCHIST -WEATHERED BEDROCK- Note: Unable to advance core barrel through casing at 90.0 ft, casing deflected from 90.0 to 100.0 ft.										
				102.0		BOTTOM OF EXPLORATION										

Notes:
1. FV1 (25.3-26.0 ft) indicates in-situ field vane performed at depth interval shown, corrected peak/residual shear strengths are provided. See Table II for details.
2. WOR = Weight of Drill Rods; WOH = Weight of Hammer.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY& ALDRICH

TEST BORING REPORT

Boring No. HA08-2

Project Maine Health/United Way Development, Portland, Maine
Client Maine Medical Center
Contractor Maine Test Borings, Inc.

File No. 35611-000
Sheet No. 1 of 3
Start 12 August 2008
Finish 13 August 2008
Driller M. Porter
H&A Rep. O. Lawlor
Elevation 9 +/-
Datum Portland City Datum
Location See Plan

	Casing	Sampler	Barrel
Type	NW	S	--
Inside Diameter (in.)	3.0	1 3/8	--
Hammer Weight (lb)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures

Rig Make & Model: Mobile Drill B-50 Bombardier
Bit Type: Roller Bit
Drill Mud: None
Casing: NW drive to 68.7 ft.
Hoist/Hammer: Winch Doughnut Hammer
PID Make & Model:

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	1 5 8 12	S1 24	0.0 2.0		SM	Medium dense, brown, silty SAND (SM), mps 0.25 in., trace wood and ash, no structure, no odor, moist -FILL-			30	30	25	15				
	12 14 12 9	NR	2.0 4.0													
5	2 3 4 6	S2 19	4.0 6.0	4.0	SP	Loose, red-brown, poorly graded SAND (SP), mps 4.0 mm, no structure, no odor, moist -FILL-			30	30	40					
	5 6 2 1	S3 14	6.0 8.0		SP	Loose, red-brown, poorly graded SAND (SP), mps 4.0 mm, no structure, no odor, moist -FILL-			30	30	40					
	1 1 1 1	S4 7	8.0 10.0	7.9	GM	Very loose, black, silty GRAVEL (GM), mps 0.5 in., trace shells and wood -FILL-	40	30	5	5		20				
10	3 11 51 54	S5 4	10.0 12.0	9.8	OL/OH	Very soft, black, ORGANIC SILT (OL/OH), mps 2.0 mm, no structure, organic odor, wet -FILL-						100				
				10.0	GP	Very dense, gray, poorly graded GRAVEL (GP), mps 1-3/8 in., no structure, no odor, wet -FILL- NOTE: Advanced roller bit through rock fill from 10.0 to 13.8 ft, advance casing to 15.0 ft and resume sampling.	20	45	5	5	5					
				14.0												
15	WOH 2 4 4	NR	15.0 17.0			Note: No recovery, probable cobble pushed by spoon tip.										
	4 6 4 4	S6 24	17.0 19.0		CL	Stiff, gray, silty lean CLAY (CL), mps 2.0 mm, no structure, no odor, moist -GLACIOMARINE DEPOSIT-										
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Depth (ft) to: Bottom of Hole	Depth (ft) to: Water

Sample ID

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (ft)	68.7
Rock Cored (ft)	0
Samples	10S

Boring No. HA08-2

Field Tests: **Dilatancy:** R - Rapid S - Slow N - None **Plasticity:** N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High **Dry Strength:** N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA08-2
File No. 35611-000
Sheet No. 2 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand				Field Test			
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20						Note: Advanced NW casing to 25.0 ft and wash out with roller bit. Bottom 10.0 ft of casing spun off and could not be retrieved. Relocated boring approximately 5 ft west and resumed sampling at 25.0 ft.										
25	WOH WOH WOH WOH	S7 24	25.0 27.0		CL	Very soft, dark gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, wet FV1 (25.3-26.0 ft), Su = 610/200 psf -GLACIOMARINE DEPOSIT-						100	N	L	L	
30																
35	WOR WOH WOH WOH	S8 4	35.0 37.0		CL	Medium stiff, gray, lean CLAY (CL), trace gravel, mps 1.0 in., no structure, no odor, wet FV2 (35.3-36.0 ft), Su = 410/120 psf -GLACIOMARINE DEPOSIT-						100	N	L	L	
40																
45	WOR WOH WOH WOH	S9 24	45.0 47.0		CL	Medium stiff, gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, wet FV3 (45.3-46.0 ft), Su = 570/160 psf -GLACIOMARINE DEPOSIT-						100	N	L	L	

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA08-2

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand				Field Test			
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
50																
55	WOR WOR WOR WOR	NR	55.0 57.0			Note: No recovery, gravel in spoon tip. FV4 (55.3-56.0 ft), Su = 490/120 psf -GLACIOMARINE DEPOSIT-										
60																
				61.0		Note: Drill action indicates stratum change at 61.0 ft. Gravel in drill wash water.										
65	11 16 16 48/3"	S10 17	65.0 67.0		SM	Dense, olive-gray, silty SAND (SM), mps 4.0 mm, bonded, no odor, moist -GLACIAL TILL-			30	30	25	15				
				66.6	BR	Note: Recovery from 66.6 to 67.0 ft consists of SCHIST. -WEATHERED BEDROCK-										
				68.7		Note: Roller cone refusal.										

BOTTOM OF EXPLORATION

Notes:
1. FV1 (25.3-26.0 ft) indicates in-situ field vane performed at depth interval shown, corrected peak/residual shear strengths are provided. See Table II for details.
2. WOR = Weight of Drill Rods; WOH = Weight of Hammer.

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TEST BORING REPORT

Boring No. HA08-3

Project	Maine Health/United Way Development, Portland, Maine
Client	Maine Medical Center
Contractor	Maine Test Borings, Inc.

File No.	35611-000
Sheet No.	1 of 2
Start	24 July 2008
Finish	24 July 2008
Driller	M. Porter
H&A Rep.	O. Lawlor
Elevation	11 +/-
Datum	Portland City Datum
Location	See Plan

	Casing	Sampler	Barrel
Type	NW	S	--
Inside Diameter (in.)	3.0	1 3/8	--
Hammer Weight (lb)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures

Rig Make & Model: Mobile Drill B-50 Bombardier
Bit Type: Roller Bit
Drill Mud: None
Casing: NW drive to 18.0 ft.
Hoist/Hammer: Winch Doughnut Hammer
PID Make & Model:

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0						-Bituminous Concrete-										
	32 17 10 7	S1 19	1.0 3.0	1.0	GW	Medium dense, gray, well-graded gravel with sand (GW), intermixed with 30% concrete fragments, no structure, no odor, moist	40	30	15	10	5					
				2.0	SM	Medium dense, gray, silty SAND (SM), mps 0.25 mm, no structure, no odor, moist			30	30	25	15				
	5 12 11 8	S2 20	3.0 5.0		SM	Medium dense, gray, silty SAND (SM), intermixed with 15% ash and cinders, mps 0.25 in, no structure, no odor, moist -FILL-			30	20	25	15				
				4.5	SW	Medium dense, red-brown, well-graded SAND (SW), mps 0.5 in., no structure, no odor, moist, sample composed entirely of cinder and ash, trace brick and coal -FILL-			30	40	30					
5	2 2 1 2	S3 9	5.0 7.0													
	9 8 6 3	S4 4	7.0 9.0		GP	Medium dense, dark brown, poorly-graded GRAVEL (GP), mps 1-3/8 in., trace cinder, glass and wood fragments -FILL-	40	35	10	5	5	5				
10	1 1 2 2	S5 20	10.0 12.0	10.0	SM	Very loose, gray, silty SAND (SM), intermixed with 15% cinders and ash, mps 0.5 in., no structure, no odor, wet, organic silt in tip of spoon -FILL-			30	30	25	15				
	1 3 3 2	S6 18	12.0 14.0	12.0	ML	Medium stiff, gray, SILT with sand (ML), mps 2.0 mm, some shell fragments, trace organic matter, no structure, hydrogen sulfide odor, moist -HARBOR BOTTOM DEPOSIT-					10	90				
15	WOH WOH 1 2	S7 16	14.0 16.0		ML	Very soft, gray, SILT with sand (ML), mps 2.0 mm, some shell fragments, trace organic matter, no structure, hydrogen sulfide odor, moist					10	90				
	WOH 2 5 7	S8 21	16.0 18.0	16.1	ML CL	Very soft, gray, SILT with sand (ML), mps 2.0 mm, some shell fragments, trace organic matter, no structure, hydrogen sulfide odor, moist Medium stiff, gray with occasional mottled brown, lean CLAY (CL), mps 2.0 mm, occasional fine sand pockets, trace root fibers, no odor, moist -GLACIOMARINE DEPOSIT-					10 5	90 95				
				18.0		BOTTOM OF EXPLORATION Notes: 1. WOH = Weight of Hammer.										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water
7/24/08		0.25	16.0	18.0	4.0
7/24/08		0.5	-	18.0	7.5

Sample ID

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (ft)	18.0
Rock Cored (ft)	0
Samples	8S

Boring No. HA08-3

Field Tests: **Dilatancy:** R - Rapid S - Slow N - None **Plasticity:** N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High **Dry Strength:** N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. HA08-4

Project	Maine Health/United Way Development, Portland, Maine
Client	Maine Medical Center
Contractor	Maine Test Borings, Inc.

File No.	35611-000
Sheet No.	1 of 3
Start	4 August 2008
Finish	4 August 2008
Driller	M. Porter
H&A Rep.	O. Lawlor
Elevation	12 +/-
Datum	Portland City Datum
Location	See Plan

	Casing	Sampler	Barrel
Type	HW	S	--
Inside Diameter (in.)	4.0	1 3/8	--
Hammer Weight (lb)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures

Rig Make & Model: Mobile Drill B-50 Bombardier

Bit Type: Roller Bit

Drill Mud: Bentonite

Casing: HW Drive to 64.4 ft.

Hoist/Hammer: Winch Doughnut Hammer

PID Make & Model:

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand				Field Test			
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0						-Bituminous Concrete-										
	15 17 14 11	S1 23	0.5 2.5	0.5	SP-SM	Dense, dark brown, poorly-graded SAND with silt (SP-SM), trace gravel, mps 1-3/8 in., intermixed with 5% cinder, ash, no structure, no odor, moist -FILL-	5		30	40	15	10				
	14 12 12 25	S2 7	2.5 4.5		SP-SM	Medium dense, dark brown, poorly-graded SAND with silt (SP-SM), trace gravel, mps 1-3/8 in., intermixed with 5% cinder, ash, no structure, no odor, moist	5		30	40	15	10				
5	8 10 7 8	S3 24	5.0 7.0		SM	Medium dense, brown, silty SAND (SM), mps 0.5 in., intermixed with 20% cinder and ash, no structure, no odor, moist -FILL-			30	30	20	20				
	8 5 3 3	S4 4	7.0 9.0		SP-SM	Loose, dark brown, poorly-graded SAND with silt (SP-SM), mps 0.25 in., trace wood, no structure, no odor, moist			35	40	15	10				
10	2 4 4 6	S5 6	9.0 11.0		SP-SM	Loose, dark brown, poorly-graded SAND with silt (SP-SM), mps 0.25 in., trace wood, trace shells and glass, no structure, no odor, wet			35	40	15	10				
	2 3 4 3	S6 12	11.0 13.0	11.0	SM	Loose, gray, silty SAND (SM), trace gravel and roots, mps 0.25 in., no structure, no odor, wet		5	15	30	30	20				
	WOH 1 3 3	S7 21	13.0 15.0	13.0	ML	Soft, gray, sandy SILT (ML), trace fine gravel, mps 0.25 mm, trace shells, no structure, no odor, wet -HARBOR BOTTOM DEPOSIT-		5		15	30	50				
15	4 12 12 15	S8 5	15.0 17.0		ML	Very stiff, gray, sandy SILT (ML), trace fine gravel, mps 0.25 mm, trace shells, no structure, no odor, wet, clay in tip of spoon		5	10	15	20	50				
	4 6 10 14	S9 24	17.0 19.0	16.9	CL	Very stiff, gray, silty lean CLAY (CL), mps 2.0 mm., occasional brown mottling, no structure, no odor, moist -GLACIOMARINE DEPOSIT-						100	N	L	L	
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Depth (ft) to: Bottom of Hole	Water

Sample ID

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram

☐	Riser Pipe
☰	Screen
⁙	Filter Sand
▨	Cuttings
■	Grout
⁘	Concrete
▧	Bentonite Seal

Summary

Overburden (ft)	66.0
Rock Cored (ft)	0
Samples	17S, 2U

Boring No. HA08-4

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand				Field Test			
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	1 3 4 4	S10 24	20.0 22.0		CL	Medium stiff, gray, silty lean CLAY (CL), mps 2.0 mm, occasional brown mottling, no structure, no odor, moist						100	N	L	L	
	1 3 3 3	S11 12	22.0 24.0		CL	Stiff, gray, silty lean CLAY (CL), mps 2.0 mm, occasional brown mottling, no structure, no odor, moist FV1 (22.3-23.0 ft), Su = 1,045 psf -GLACIOMARINE DEPOSIT-						100	N	L	L	
25	P U S H	U1 23	25.0 27.0													
						FV2 (27.3-28.0 ft), Su = 590/160 psf										
30	WOR WOR WOR WOR	S12 22	30.0 32.0		CL	Medium stiff, dark gray, lean CLAY (CL), trace fine sand and gravel from 31.7 to 32.0 ft., no structure, no odor, wet FV3 (30.3-31.0 ft), Su = 500/90 psf					5	95	N	L	L	
	P U S H	U2 23	33.0 35.0													
35						FV4 (35.3-36.0 ft), Su = 340/65 psf -GLACIOMARINE DEPOSIT-										
40	WOR WOR WOR WOR	S13 22	40.0 42.0		CL	Soft, gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, wet Su = 400/120 psf FV5 (40.3-41.0 ft), Su = 400/120 psf						100	N	L	L	
45	WOR WOR WOR WOR	S14 24	45.0 47.0		CL	Soft, gray, lean CLAY (CL), trace gravel, mps 2.0 mm, no structure, no odor, wet FV6 (45.3-46.0 ft), Su = 420/110 psf -GLACIOMARINE DEPOSIT-						100	N	L	L	

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. HA08-4
File No. 35611-000
Sheet No. 3 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
50	WOR WOR WOR WOR	S15 24	50.0 52.0		CL	Medium stiff, gray, lean CLAY (CL), trace gravel, mps 2.0 mm, no structure, no odor, wet FV7 (50.3-51.0 ft), Su = 610/80 psf						100	N	L	L	
55	WOR 3 3 6	S16 24	55.0 57.0	55.4	SC	Loose, gray, clayey SAND (SC), mps 4.0 mm, no structure, no odor, wet -GLACIOMARINE DEPOSIT-					75	25				
				58.8												
60	13 17 24 34	S17 24	60.0 62.0		SM	Dense, gray, silty SAND (SM), trace gravel, mps 1-3/8 in., bonded, no odor, moist -GLACIAL TILL- Note: Drill action indicates probable bedrock at 64.4 ft.		5	20	30	30	15				
65				64.4		-WEATHERED BEDROCK-										
				66.0		Note: Roller bit refusal at 66.0 ft. BOTTOM OF EXPLORATION										

Notes:
1. FV1 (22.3-23.0 ft) indicates in-situ field vane performed at depth interval shown, corrected peak/residual shear strengths are provided. See Table II for details.
2. WOR = Weight of Drill Rods; WOH = Weight of Hammer.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA08-4

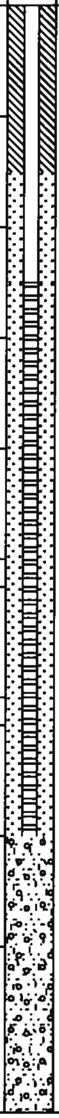
HALEY& ALDRICH

TEST BORING REPORT

Boring No. HA08-5(OW)

Project	Maine Health/United Way Development, Portland, Maine	File No.	35611-000
Client	Maine Medical Center	Sheet No.	1 of 4
Contractor	Maine Test Borings, Inc.	Start	31 July 2008
		Finish	1 August 2008
		Driller	M. Porter
		H&A Rep.	O. Lawlor
		Elevation	9 +/-
		Datum	Portland City Datum
		Location	See Plan

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NW	S	NQ	Rig Make & Model: Mobile Drill B-50 Bombardier
Inside Diameter (in.)	3.0	1 3/8	2.0	Bit Type: Roller Bit Drill Mud: None
Hammer Weight (lb)	300	140	-	Casing: NW drive to 63.8 ft.
Hammer Fall (in.)	30	30	-	Hoist/Hammer: Winch Doughnut Hammer PID Make & Model:



Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	4 9 11 22	S1 11	0.0 2.0			SP	Medium dense, brown, poorly-graded SAND (SP), occasional silt pockets, trace cinder and ash, mps 1.0 in., no structure, no odor, moist -FILL-			30	40	25	5				
	22 19 13 11	S2 14	2.0 4.0			SW-SM	Dense, brown, well-graded SAND with silt (SW-SM), mps 1-3/8 in., trace cinders and ash			30	40	20	10				
5	6 5 2 3	S3 8	4.0 6.0			SW-SM	Loose, brown, well-graded SAND with silt (SW-SM), mps 1-3/8 in., trace cinders and ash -FILL-			30	40	20	10				
	2 1 1 6	S4 5	6.0 8.0			SW-SM	Very loose, brown, well-graded SAND with silt (SW-SM), mps 1-3/8 in., trace cinders and ash, wet			30	40	20	10				
	6 5 2 1	S5 7	8.0 10.0		8.0	SM	Loose, gray, silty SAND (SM), mps 0.5 in., trace shell and brick fragments, no structure, no odor, moist -FILL-			20	30	35	15				
10																	
	2 2 3 3	S6 20	10.5 12.5		10.5	OL/OH	Medium stiff, dark gray, ORGANIC SILT (OL/OH), mps 0.25 in., trace shell fragments, no structure, organic odor, moist -HARBOR BOTTOM DEPOSIT-						100				
	10 11 14 15	S7 6	13.0 15.0		13.0	CL	Medium stiff, olive-gray, silty lean CLAY (CL), mps 2.0 mm, no structure, no odor, moist, probable rock pushed by spoon						100	N	L	L	
15	3 4 4 5	S8 20	15.0 17.0			CL	Medium stiff, gray with brown mottles, silty lean CLAY (CL), mps 2.0 mm, no structure, no odor, moist -GLACIOMARINE DEPOSIT-						100	N	L	L	
20																	

Water Level Data					
Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Depth (ft) to: Bottom of Hole	Water

Sample ID
- O - Open End Rod
- T - Thin Wall Tube
- U - Undisturbed Sample
- S - Split Spoon Sample

Well Diagram
- ▯ Riser Pipe
- ☰ Screen
- ░ Filter Sand
- ▩ Cuttings
- ■ Grout
- ▦ Concrete
- ▨ Bentonite Seal

Summary

Overburden (ft)	63.8
Rock Cored (ft)	5.0
Samples	13S, 1C

Boring No. HA08-5(OW)

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Plasticity**: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. HA08-5(OW)
File No. 35611-000
Sheet No. 2 of 4

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20							FV1 (20.3-21.0 ft), Su = 720/260 psf										
25	WOR WOR WOH WOH	S9 24	25.0 27.0			CL	Medium stiff, gray to black, lean CLAY (CL), mps 2.0 mm, no structure, no odor, moist FV2 (25.3-26.0 ft), Su = 720/200 psf						100	N	M	M	
30							FV3 (30.3-31.0 ft), Su = 730/170 psf -GLACIOMARINE DEPOSIT-										
35	WOR WOR WOR WOR	S10 21	35.0 37.0			CL	Medium stiff, gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, wet FV4 (35.3-36.0 ft), Su = 600/290 psf						100	N	L	L	
40	WOR WOR WOR WOR	S11 24	40.0 42.0			CL	Medium stiff, gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, wet FV5 (40.3-41.0 ft), Su = 600/190 psf -GLACIOMARINE DEPOSIT-						100	N	L	L	
45																	

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA08-5(OW)

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA08-5(OW)
File No. 35611-000
Sheet No. 3 of 4

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
50	WOR WOR WOR WOR	S12 24	50.0 52.0			CL	Medium stiff, gray, lean CLAY (CL), fine sand in spoon tip, mps 2.0 mm, no structure, no odor, wet FV6 (50.3-51.0 ft), Su = 700/370 psf -GLACIOMARINE DEPOSIT- Note: Sand and fine gravel observed in wash water.					5	95	N	L	L	
					53.0		-PROBABLE GLACIAL TILL-										
55																	
60	16 9 7 10	NR	60.0 62.0														
					62.5		Note: Casing refusal at 62.5 ft. Advanced roller bit to 63.8 ft. Begin NQ Rock Core at 63.8 ft. See Core Boring Report for Details.										
	36 50/1"	S13 5	63.2 63.7				Notes: 1. FV1 (20.3-21.0 ft) indicates in-situ field vane performed at depth interval shown, corrected peak/residual shear strengths are provided. See Table II for details. 2. WOR = Weight of Drill Rods; WOH = Weight of Hammer.										
65																	

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA08-5(OW)

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CORE BORING REPORT

Boring No. HA08-5(OW)
File No. 35611-000
Sheet No. 4 of 4

Depth (ft)	Drilling Rate (min./ft)	Run No.	Run Depth (ft)	Recovery/RQD in.	Recovery/RQD %	Weathering	Elev./Depth (ft)	Visual Description and Remarks
								SEE TEST BORING REPORT FOR OVERBURDEN DETAILS
65	6 7	C1	63.8 65.4	19 0	99 0			Moderately hard, moderate to highly weathered, dark green aphanitic CHLORITE SCHIST. Foliation is extremely thin, vertical. Primary joint set is parallel to foliation, vertical, extremely close, smooth, stepped, fresh to discolored with pyrite, open. Note: RQD affected by extremely close fractures and drill action.
	6 6 7	C2	65.4 68.8	36 12	88 29		65.4	Moderately hard, moderate to highly weathered, dark green aphanitic CHLORITE SCHIST. Occasional, very thin, high angle to vertical quartz veins. Primary joint set is parallel to foliation, vertical, extremely close, smooth, stepped, fresh to discolored with pyrite, open.
70							68.8	BOTTOM OF EXPLORATION Note: Observation Well installed in completed borehole. See installation report for details.
75								
80								
85								
90								

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TEST BORING REPORT

Boring No. HA08-6

Project Maine Health/United Way Development, Portland, Maine
Client Maine Medical Center
Contractor Maine Test Borings, Inc.

File No. 35611-000
Sheet No. 1 of 1
Start 23 July 2008
Finish 24 July 2008
Driller M. Porter
H&A Rep. O. Lawlor
Elevation 10 +/-
Datum Portland City Datum
Location See Plan

	Casing	Sampler	Barrel
Type	NW	S	--
Inside Diameter (in.)	3.0	1 3/8	--
Hammer Weight (lb)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures
Rig Make & Model: Mobile Drill B-50 Bombardier
Bit Type: Roller Bit
Drill Mud: None
Casing: NW drive to 12.0 ft.
Hoist/Hammer: Winch Doughnut Hammer
PID Make & Model:

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 5 13 6	S1 22	0.0 2.0		SM	Medium dense, brown, silty SAND (SM), mps 1.0 in., no structure, no odor, moist -FILL-		5	30	30	20	15				
	13 17 17 18	S2 21	2.0 4.0		SM	Dense, gray to brown, silty SAND (SM), mps 1.0 in. trace brick fragments, cinders, wood, no structure, cinder odor, moist		5	30	30	20	15				
	5 6 9 10	S3 20	4.0 6.0		SM	Medium dense, gray to brown, silty SAND (SM), mps 1.0 in. trace brick fragments, cinders, wood, no structure, cinder odor, moist		5	30	30	20	15				
5				5.0	SW	Medium dense, light brown, well-graded SAND (SW), occasional silt pockets, mps 0.5 in., no structure, no odor, moist		5	30	35	30					
	6 2 2 2	S4 16	6.0 8.0		SW	Very loose, brown, well-graded SAND (SW), occasional pockets of dark gray sandy silt, mps 0.25 in., no structure, no odor, moist		5	30	35	30					
	3 4 3 4	S5 8	8.0 10.0		SM	Loose, dark brown, silty SAND with gravel (SM), mps 1.0 in., no structure, no odor, wet -FILL-	5	5	20	25	25	20				
10	5 4 7 5	S6 2	10.0 12.0		SM	Medium dense, dark brown, silty SAND with gravel (SM), mps 1.0 in., no structure, no odor, wet, trace brick and shell fragments	5	5	20	25	25	20				
	4 2 2 5	S7 14	12.0 14.0	12.3	SM	Loose, dark brown, silty SAND with gravel (SM), mps 1.0 in., no structure, no odor, wet, trace brick and shell fragments	5	5	20	25	25	20				
					ML	Soft, gray, sandy SILT (ML), little shell fragments, trace clay, frequent partings along fine sand seams, no odor, moist -HARBOR BOTTOM DEPOSIT-					5	95				
				14.0		BOTTOM OF EXPLORATION										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Depth (ft) to: Bottom of Hole	Water
N/A					

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 14.0
Rock Cored (ft) 0
Samples 7S

Boring No. HA08-6

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. HA08-7(OW)

Project Maine Health/United Way Development, Portland, Maine
Client Maine Medical Center
Contractor Maine Test Borings, Inc.

File No. 35611-000
Sheet No. 1 of 4
Start 30 July 2008
Finish 31 July 2008
Driller M. Porter
H&A Rep. O. Lawlor

Elevation 12 +/-
Datum Portland City Datum
Location See Plan

	Casing	Sampler	Barrel
Type	NW	S	NQ
Inside Diameter (in.)	3.0	1 3/8	2.0
Hammer Weight (lb)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures
Rig Make & Model: Mobile Drill B-50 Bombardier
Bit Type: Roller Bit
Drill Mud: None
Casing: NW drive to 62.0 ft.
Hoist/Hammer: Winch Doughnut Hammer
PID Make & Model:

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	6 12 13 12	S1 15	0.0 2.0			SW-SM	Medium dense, dark brown, well-graded SAND with silt (SW-SM), mps 0.25 in., intermixed with 10% ash and brick, trace wood, no structure, no odor, moist -FILL-			30	40	20	10				
	6 12 21 25	S2 16	2.0 4.0			SW-SM	Dense, dark brown, well-graded SAND with silt (SW-SM), mps 0.25 in., intermixed with 10% ash and brick, trace wood, occasional sandy silt pockets, no structure, no odor, moist			30	40	20	10				
5	5 7 12 9	S3 24	4.0 6.0			SM	Medium dense, brown, silty SAND (SM), mps 0.25 in., intermixed with 15% cinder and ash fragments, no structure, no odor, moist -FILL-			20	30	30	20				
	3 4 5 2	S4 24	6.0 8.0		6.2	SM SM	Loose, brown, silty SAND (SM), mps 0.25 in., intermixed with 15% cinder and ash fragments, no structure, no odor, moist Loose, gray, silty SAND (SM), mps 4.0 mm, no structure, no odor, wet			20 20	30 30	30 25	20 25				
	7 15 14 10	S5 20	8.0 10.0		8.0	SW	Medium dense, light brown, well-graded SAND (SW), mps 1-3/8 in., no structure, no odor, wet -FILL-			35	30	30					
10	3 2 2 2	S6 10	10.0 12.0		10.0	SM	Very loose, gray, silty SAND (SM), trace clay, mps 4.0 mm, no structure, no odor, wet -FILL-			20	30	30	20				
	1 1 2 1	S7 17	12.0 14.0		12.5	SM OL/OH	Very loose, gray, silty SAND (SM), trace clay, mps 4.0 mm, no structure, no odor, wet Soft, dark brown, ORGANIC SILT (OL/OH), trace sand and shells, mps 2.0 mm, no structure, organic odor, wet -HARBOR BOTTOM DEPOSIT-			20	30	30 5	20 95				
15	4 4 4 7	NR	14.0 16.0		14.0		Note: No recovery, probable gravel pushed by spoon through clay.										
	2 3 4 7	S8 24	16.0 18.0			CL	Medium stiff, mottled olive-gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, moist -GLACIOMARINE DEPOSIT-						100				
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Depth (ft) to: Bottom of Hole	Depth (ft) to: Water

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
◫ Riser Pipe
▤ Screen
⬚ Filter Sand
▩ Cuttings
■ Grout
▦ Concrete
▨ Bentonite Seal

Summary
Overburden (ft) 62.0
Rock Cored (ft) 10.0
Samples 14S, 2C

Boring No. HA08-7(OW)

Field Tests: **Dilatancy:** R - Rapid S - Slow N - None **Plasticity:** N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High **Dry Strength:** N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. HA08-7(OW)
File No. 35611-000
Sheet No. 2 of 4

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	WOR WOH WOH WOH	S9 24	20.0 22.0			CL	Medium stiff, gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, moist FV1 (20.3-21.0 ft), Su = 830/320 psf -GLACIOMARINE DEPOSIT-						100	N	L	L	
25							FV2 (25.3-26.0 ft), Su = 730/170 psf										
30	WOH WOH WOH WOR	S10 24	30.0 32.0			CL	Medium stiff, gray, lean CLAY (CL), occasional partings along fine sand seams, no odor, moist FV3 (30.3-31.0 ft), Su = 680/280 psf -GLACIOMARINE DEPOSIT-						100	N	L	L	
35							FV4 (35.3-36.0 ft), Su = 870/210 psf										
					38.0												
40	5 5 9 19	S11 2	40.0 42.0			SM	Medium dense, gray, silty SAND with gravel (SM), mps 1-3/8 in., well bonded, no odor, wet -GLACIAL TILL-	5		15	30	30	20				
45	12 8 9 10	S12 21	45.0 47.0			SM	Medium dense, gray, silty SAND with gravel (SM), mps 1-3/8 in., well bonded, no odor, wet -GLACIAL TILL-	5	5	15	25	30	20				

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA08-7(OW)

H&A-TEST BORING-07-1 HA-LIB07-1R-POR-06-03-08.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\35611\FIELD PROGRAM\35611-000 TB.GPJ 10 Sep 08

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TEST BORING REPORT

Boring No. HA08-7(OW)
File No. 35611-000
Sheet No. 3 of 4

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
50							Note: Drilled through cobble from 50.1 to 50.5 ft.										
	8 6 9 16	S13 22	50.5 52.5				Medium dense, silty SAND with gravel (SM), mps 1-3/8 in., well bonded, no odor, wet -GLACIAL TILL-	5	5	30	25	20	15				
55																	
60	40 75 125 50/1"	S14 12	60.0 61.6		60.1		Very dense, silty SAND with gravel (SM), mps 1-3/8 in., well bonded, no odor, wet, 1/2 to 1-3/8 in. fragments of weathered CHLORITE SCHIST -WEATHERED BEDROCK-	5	5	15	25	35	15				
					61.6		Note: Bedrock encountered at 61.6 ft. Advanced roller bit to 62.0 ft. Begin NQ rock core at 62.0 ft. See Core Boring Report for details.										
65																	
70																	

Notes:
1. FV1 (20.3-21.0 ft) indicates in-situ field vane performed at depth interval shown, corrected peak/residual shear strengths are provided. See Table II for details.
2. WOR = Weight of Drill Rods; WOH = Weight of Hammer.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA08-7(OW)

HALEY & ALDRICH

CORE BORING REPORT

Boring No. HA08-7(OW)
File No. 35611-000
Sheet No. 4 of 4

Depth (ft)	Drilling Rate (min./ft)	Run No.	Run Depth (ft)	Recovery/RQD in.	Recovery/RQD %	Weathering	Elev./ Depth (ft)	Visual Description and Remarks
								SEE TEST BORING REPORT FOR OVERBURDEN DETAILS
	2	C1	62.0 67.0	36 6	60 10			Moderately hard, moderate to highly weathered, dark gray, aphanitic SILTSTONE. Foliation is extremely thin, high angle to vertical. Primary joint set is parallel to foliation, high angle to vertical, close to extremely close, rough, stepped to undulating, fresh to discolored with pyrite, tight.
	2							
	2							
65	2							
	2							
	2	C2	67.0 72.0	24 0	40 0		67.0	Note: Recovery consists of 1.0 to 3.0 in. pieces and fragments of hard, dark gray, slightly weathered, aphanitic SILTSTONE, due to extremely close fracture spacings and drill action.
	2							
	3							
70	3							
	3							Note: Advanced roller bit to 70.6 ft. to flush unrecovered rock fragments. Borehole caved to 65.0 ft after removal of drill rods.
	2						72.0	BOTTOM OF EXPLORATION Note: Observation well installed in completed borehole. See installation report for details.
75								
80								
85								
90								

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TEST BORING REPORT

Boring No. HA08-8

Project	Maine Health/United Way Development, Portland, Maine
Client	Maine Medical Center
Contractor	Maine Test Borings, Inc.

File No.	35611-000
Sheet No.	1 of 3
Start	6 August 2008
Finish	7 August 2008
Driller	M. Porter
H&A Rep.	O. Lawlor
Elevation	9 +/-
Datum	Portland City Datum
Location	See Plan

	Casing	Sampler	Barrel
Type	HW	S	--
Inside Diameter (in.)	4.0	1 3/8	--
Hammer Weight (lb)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures

Rig Make & Model: Mobile Drill B-50 Bombardier
Bit Type: Roller Bit
Drill Mud: Bentonite
Casing: HW Drive to 50.5 ft.
Hoist/Hammer: Winch Doughnut Hammer
PID Make & Model:

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 10 13 14	S1 5	0.0 2.0	0.2	SW	-TOPSOIL- Medium dense, light brown, well-graded SAND with gravel (SW), mps 0.25 in., no structure, no odor, moist	5	5	30	40	20					
	11 14 26 29	S2 16	2.0 4.0	2.0	SM	Dense, gray-green, silty SAND with gravel (SM), mps 1 3/8 in., no structure, no odor, moist, reworked till -FILL- NOTE: Augered through cobble from 4.0 - 4.7 ft.	5	5	25	25	25	15				
5	1 1 1 3	S3 20	5.0 7.0		SM	Very loose, gray-green, silty SAND with gravel (SM), mps 1 3/8 in., no structure, no odor, moist, reworked till -FILL-	5	5	25	25	25	15				
	2 2 4 3	S4 19	7.0 9.0		SM	Loose, gray-green, silty SAND with gravel (SM), mps 1 3/8 in., no structure, no odor, moist, reworked till -FILL-	5	5	25	25	25	15				
10	3 1 1 1	S5 13	9.0 11.0	9.5	OL/ OH	Very soft, dark gray, ORGANIC SILT (OL/OH), trace sand, glass and shell fragments, mps 4.0 mm, no structure, no odor, wet -HARBOR BOTTOM DEPOSIT-					5	95				
	6 13 4 6	S6 19	12.0 14.0		OL/ OH	Medium dense, dark gray, ORGANIC SILT (OL/OH), trace sand, glass and shell fragments, mps 4.0 mm, no structure, no odor, wet					5	95				
15	2 3 4 7	S7 24	14.0 16.0	13.8	CL	Medium stiff, olive-gray, silty lean CLAY (CL), trace gravel, occasional brown mottles, mps 0.25 in., no structure, no odor, moist -GLACIOMARINE DEPOSIT-		5				95	N	L	L	
	WOR WOH WOH WOH	S8 24	16.0 18.0		CL	Soft, gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, wet FV1 (18.3-19.0 ft), Su = 460/70 psf -GLACIOMARINE DEPOSIT-						100	N	L	L	
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Depth (ft) to: Bottom of Hole	Depth (ft) to: Water
8/7/08			-	50.5	9.0

Sample ID

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram

▥	Riser Pipe
▤	Screen
▒	Filter Sand
▨	Cuttings
■	Grout
▦	Concrete
▧	Bentonite Seal

Summary

Overburden (ft)	50.5
Rock Cored (ft)	0
Samples	13S, 2U

Boring No. HA08-8

Field Tests:
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA08-8
File No. 35611-000
Sheet No. 2 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	P U S H	U1 18	20.0 22.0													
						FV2 (22.3-23.0 ft), Su = 610/50 psf										
25	WOR WOH WOH WOH	S9 24	25.0 27.0		CL	Very soft, gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, wet -GLACIOMARINE DEPOSIT-						100				
30	WOR WOR 1 WOH	S10 24	30.0 32.0		CL	Soft, gray, lean CLAY (CL), mps 2.0 mm FV3 (30.3-31.0 ft), Su = 380/120 psf -GLACIOMARINE DEPOSIT-						100	N	L	L	
35	WOR WOR WOR WOR	S11 24	35.0 37.0		CL	Medium stiff, gray, lean CLAY (CL), mps 2.0 mm FV4 (35.3-36.0 ft), Su = 780/150 psf -GLACIOMARINE DEPOSIT-						100	N	L	L	
						FV5 (39.3-40.0 ft), Su = 1,030/80 psf										
40																
	P U S H	U2 24	41.0 43.0													
	2 6 6 7	S12 18	43.0 45.0	43.0	SP	Medium dense, gray, poorly-graded SAND (SP), trace gravel, mps 0.5 in., no structure, no odor, wet -GLACIOMARINE DEPOSIT-	5		20	30	45					
45																
						Note: Casing refusal on probable bedrock at 48.6 ft.										
				48.6		-WEATHERED BEDROCK-										

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA08-8

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA08-8
File No. 35611-000
Sheet No. 3 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand				Field Test			
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
50																
	100/1"	S13 4	50.2 50.5	50.5		Weathered Rock fragments -WEATHERED BEDROCK- Note: Split spoon refusal										

BOTTOM OF EXPLORATION

Notes:
1. FV1 (22.3-23.0 ft) indicates in-situ field vane performed at depth interval shown, corrected peak/residual shear strengths are provided. See Table II for details.
2. WOR = Weight of Drill Rods; WOH = Weight of Hammer.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA08-8

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA08-9

Project	Maine Health/United Way Development, Portland, Maine	File No.	35611-000
Client	Maine Medical Center	Sheet No.	1 of 1
Contractor	Maine Test Borings, Inc.	Start	24 July 2008
		Finish	24 July 2008
		Driller	M. Porter
		H&A Rep.	O. Lawlor
		Elevation	11 +/-
		Datum	Portland City Datum
		Location	See Plan

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NW	S	--	Rig Make & Model: Mobile Drill B-50 Bombardier
Inside Diameter (in.)	3.0	1 3/8	--	Bit Type: Roller Bit Drill Mud: None
Hammer Weight (lb)	300	140	-	Casing: NW drive to 16.0 ft.
Hammer Fall (in.)	30	30	-	Hoist/Hammer: Winch Doughnut Hammer PID Make & Model:

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 3 5 6	S1 3	0.0 2.0		GM	Loose, gray-brown, silty GRAVEL with sand (GM), mps 0.5 in., no structure, organic odor, wet -FILL-	15	45	10	10	5	15				
	4 6 9 11	S2 22	2.0 4.0	2.0		Note: Sample composed of cinder and ash from 2.0 to 3.0 ft.										
				3.0	SM	Medium dense, gray, silty SAND (SM), trace gravel, mps 0.25 in., no structure, no odor		5	30	30	20	15				
5	1 3 3 3	S3 22	4.0 6.0		SM	Loose, gray, silty SAND (SM), mps 0.25 in., no structure, no odor, moist -FILL-			10	30	30	30				
	1 2 3 3	S4 16	6.0 8.0		SM	Loose, gray, silty SAND (SM) with gravel, mps 0.25 in., no structure, no odor, moist Note: Groundwater encountered at 7.1 ft.	5	5	15	30	15	30				
	WOH 3 6 11	S5 10	8.0 10.0		SM	Loose, gray, silty SAND (SM) with gravel, mps 0.25 in., no structure, no odor, moist -FILL-	5	5	15	30	15	30				
10	4 5 3 2	S6 8	10.0 12.0		SM	Loose, gray, silty SAND (SM) with gravel, mps 0.25 in., no structure, no odor, moist, trace wood and glass fragments	5	5	20	30	25	15				
	2 3 4 5	S7 2	12.0 14.0	12.0	ML	Medium stiff, dark gray, SILT (ML), trace wood, mps 2.0 mm, no structure, organic odor, wet -HARBOR BOTTOM DEPOSIT-					5	95				
15	5 4 6 5	S8 20	14.0 16.0	14.0	CL	Stiff, gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, moist -GLACIOMARINE DEPOSIT-						100				
				16.0		BOTTOM OF EXPLORATION Note: 1. WOH = Weight of Hammer.										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Depth (ft) to: Bottom of Hole	Depth (ft) to: Water
7/24/08	1315	0.25	14.0	16.0	3.7

Sample ID

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram

◫ Riser Pipe
▤ Screen
⁙ Filter Sand
▨ Cuttings
■ Grout
⁖ Concrete
▧ Bentonite Seal

Summary

Overburden (ft)	16.0
Rock Cored (ft)	0
Samples	8S
Boring No.	HA08-9

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA08-10

Project Maine Health/United Way Development, Portland, Maine
Client Maine Medical Center
Contractor Maine Test Borings, Inc.

File No. 35611-000
Sheet No. 1 of 3
Start 7 August 2008
Finish 7 August 2008
Driller M. Porter
H&A Rep. O. Lawlor
Elevation 9 +/-
Datum Portland City Datum
Location See Plan

	Casing	Sampler	Barrel
Type	HW	S	--
Inside Diameter (in.)	4.0	1 3/8	--
Hammer Weight (lb)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures

Rig Make & Model: Mobile Drill B-50 Bombardier
Bit Type: Roller Bit
Drill Mud: Bentonite
Casing: HW drive to 49.5 ft.
Hoist/Hammer: Winch Doughnut Hammer
PID Make & Model:

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	5 8 17 21	S1 20	0.0 2.0		ML	Medium dense, olive-gray, sandy SILT (ML), trace gravel and brick, mps 0.25 in., bonded, no odor, moist - till fill -FILL-		5	10	15	20	50				
	17 15 14 12	S2 23	2.0 4.0	2.0	SM	Medium dense, olive-gray, silty SAND (SM), trace gravel, mps 0.25 in., no structure, no odor, moist -FILL-		5	15	30	30	20				
5	2 2 3 3	S3 19	4.0 6.0		SM	Loose, olive-gray, silty SAND (SM), trace gravel, mps 0.25 in., no structure, no odor, wet -FILL-		5	15	30	30	20				
	3 5 8 15	S4 12	6.0 8.0		SM	Medium dense, olive-gray, silty SAND (SM), trace gravel, mps 0.25 in., no structure, no odor, wet -FILL- NOTE: Wood in spoon tip with creosote-like odor.		5	15	30	30	20				
	8 6 6 3	S5 7	8.0 10.0	8.0	OL/ OH	Medium dense, dark gray to black, sandy ORGANIC SILT (OL/OH), trace brick and metal -HARBOR BOTTOM DEPOSIT-			10	10	10	70				
10	1 2 2 2	S6 24	10.0 12.0		OL/OH	Soft, dark gray to black, sandy ORGANIC SILT (OL/OH), trace shells -HARBOR BOTTOM DEPOSIT-						100	N	L	L	
	2 3 3 4	S7 15	12.0 14.0	11.3	CL	Medium stiff, gray, silty lean CLAY (CL), trace sand, mps 4.0 mm, no structure, no odor, moist -GLACIOMARINE DEPOSIT-					5	95	N	L	L	
15																
	WOR WOR	S8 24	19.0 21.0		CL	Medium stiff, gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, wet						100	N	L	L	
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Depth (ft) to: Bottom of Hole	Depth (ft) to: Water

Sample ID

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram

▯ Riser Pipe
▤ Screen
░ Filter Sand
▒ Cuttings
■ Grout
▦ Concrete
▧ Bentonite Seal

Summary

Overburden (ft) 49.5
Rock Cored (ft) 0
Samples 12S, 1U

Boring No. HA08-10

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY& ALDRICH

TEST BORING REPORT

Boring No. HA08-10
File No. 35611-000
Sheet No. 2 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand				Field Test			
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	WOH WOH					FV1 (19.3-20.0 ft), Su = 520/110 psf -GLACIOMARINE DEPOSIT-										
						FV2 (23.3-24.0 ft), Su = 730/130 psf										
						Note: Wood fibers observed in wash water from 24.5 to 25.0 ft.										
25	P U S H	U1 22	25.0 27.0													
						FV3 (27.3-28.0 ft), Su = 400/90 psf										
30	WOR WOR WOR WOR	S9 24	30.0 32.0		CL	Very soft, gray, lean CLAY (CL), mps 2.0 mm, occasional fine sand partings, no odor, wet FV4 (30.0-31.0 ft), Su = 220/70 psf -GLACIOMARINE DEPOSIT-					5	95	N	L	L	
35	WOR WOR 3 2	S10 24	35.0 37.0	35.2	CL	Very soft, gray, lean CLAY (CL), mps 2.0 mm, occasional fine sand partings, no odor, wet					5	95	N	L	L	
					SM	Loose, gray, silty SAND (SM), mps 4.0 mm, no structure, no odor, wet -GLACIOMARINE DEPOSIT-			5	10	70	15				
40	5 2 7 7	S11 6	40.5 42.5		SW-SM	Loose, gray, well graded SAND with silt (SW-SM), mps 0.25 in., no structure, no odor, wet -GLACIOMARINE DEPOSIT-	5	5	25	25	30	10				
45	9 9 5 6	S12 6	45.5 47.5	45.5	SP-SM	Medium dense, gray, poorly graded SAND with silt (SP-SM), mps 0.25 in., no structure, no odor, wet, schist fragment in tip of spoon -GLACIAL TILL-	5	5	5	25	50	10				
				47.5	BR	-WEATHERED BEDROCK-										
				49.5												

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA08-10

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA08-10
File No. 35611-000
Sheet No. 3 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
						Note: Roller cone refusal. BOTTOM OF EXPLORATION Notes: 1. FV1 (19.3-20.0 ft) indicates in-situ field vane performed at depth interval shown, corrected peak/residual shear strengths are provided. See Table II for details. 2. WOR = Weight of Drill Rods; WOH = Weight of Hammer.										

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA08-10

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA08-11

Project Maine Health/United Way Development, Portland, Maine
Client Maine Medical Center
Contractor Maine Test Borings, Inc.

File No. 35611-000
Sheet No. 1 of 3
Start 28 July 2008
Finish 29 July 2008
Driller M. Porter
H&A Rep. O. Lawlor
Elevation 11 +/-
Datum Portland City Datum
Location See Plan

	Casing	Sampler	Barrel
Type	NW	S	--
Inside Diameter (in.)	3.0	1 3/8	--
Hammer Weight (lb)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures

Rig Make & Model: Mobile Drill B-50 Bombardier
Bit Type: Roller Bit
Drill Mud: None
Casing: NW drive to 55.0 ft.
Hoist/Hammer: Winch Doughnut Hammer
PID Make & Model:

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	3 10 13 10	S1 22	0.0 2.0		SM	Medium dense, brown, silty SAND with gravel (SM), mps 0.75 in., intermixed with 10% brick, cinders, and plastics fragments, no structure, no odor, moist -FILL-	5	5	25	30	20	15				
	16 34 29 29	S2 24	2.0 4.0		SM	Very dense, creosote colored, silty SAND with gravel (SM), mps 0.75 in., intermixed with 30% wood, brick, and cinders, no structure, no odor, moist	5	5	25	30	20	15				
5	12 20 18 13	S3 24	4.0 6.0	4.1	SM SW	Very dense, creosote colored, silty SAND with gravel (SM), mps 0.75 in., intermixed with 30% wood, brick, and cinders, no structure, no odor, moist Dense, light brown, well-graded, SAND (SW), mps 4.0 mm, no structure, no odor, moist	5	5	25 25	30 30	20 45	15				
	7 7 6 7	S4 16	6.0 8.0		SW	Medium dense, gray-brown, well-graded SAND (SW), mps 0.25 in., no structure, no odor, wet			30	35	35					
	7 11 18 11	S5 18	8.0 10.0		SW	Medium dense, gray, well-graded SAND (SW), mps 0.25 in., no structure, no odor, wet -FILL-			35	30	30					
10	2 4 6 2	S6 13	10.0 12.0		SW	Loose, gray, well-graded SAND (SW), mps 0.25 in., occasional silt pockets, material appears reworked, no structure, no odor, wet			30	30	30	10				
						Note: Organics observed in wash water from 12.0 to 12.5 ft.										
	2 3 3 4	S7 24	12.5 14.5	12.5	SM	Loose, gray, silty SAND (SM), mps 0.25 in., some shell fragments, no structure, no odor, wet -HARBOR BOTTOM DEPOSIT-			10	10	55	25				
				14.2	CL	Medium stiff, gray, silty lean CLAY (CL), mps 4.0 mm, no structure, no odor, wet with occasional brown mottles						100				
15	1 2 2 2	S8 24	15.0 17.0		CL	Soft, gray, lean CLAY (CL), mps 4.0 mm, frequent partings along fine sand seams, no odor, moist -GLACIOMARINE DEPOSIT-										
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Depth (ft) to: Bottom of Hole	Depth (ft) to: Water

Sample ID

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram

◫ Riser Pipe
⊟ Screen
░ Filter Sand
▒ Cuttings
■ Grout
▓ Concrete
▧ Bentonite Seal

Summary

Overburden (ft) 55.0
Rock Cored (ft) 0
Samples 12S

Boring No. HA08-11

Field Tests: **Dilatancy:** R - Rapid S - Slow N - None **Plasticity:** N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High **Dry Strength:** N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

TEST BORING REPORT

Boring No. HA08-11
File No. 35611-000
Sheet No. 2 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20																
25	WOR WOH WOH WOH	S9 24	25.0 27.0		CL	Medium stiff, gray, silty lean CLAY (CL), mps 2.0 mm, no structure, no odor, moist FV1 (25.3-26.0 ft), Su = 720/170 psf -GLACIOMARINE DEPOSIT-						100	N	L	N	
30																
				34.0		Note: Drill action indicates probable gravel from 34.0 to 35.0 ft. Fine gravel observed in wash water.										
35	2 3 2 2	S10 19	35.0 37.0		SP-SM	Loose, gray, poorly-graded SAND with silt (SP-SM), trace gravel, mps 0.25 in., no structure, no odor, wet -GLACIOMARINE DEPOSIT-		5		5	80	10				
40	8 11 10 19	S11 4	40.0 42.0		SP-SM	Medium dense, gray, poorly-graded SAND with silt (SP-SM), trace gravel, mps 1-3/8 in., no structure, no odor, wet -GLACIOMARINE DEPOSIT-	5			5	80	10				
45																

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA08-11
File No. 35611-000
Sheet No. 3 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	**VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION** (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand				Field Test			
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
50	10 12 19 13	S12 9	50.0 52.0		SM	Dense, gray, silty SAND (SM), trace gravel, mps 0.5 in., bonded, no odor, wet GLACIAL TILL- Note: Drill action indicates probable bedrock at 52.5 ft.		5	10	10	60	15				
				52.5		-WEATHERED BEDROCK-										
55				55.0		Note: Casing refusal at 53.4 ft. Roller bit refusal at 55 ft.										

BOTTOM OF EXPLORATION

Notes:
1. FV1 (25.3-26.0 ft) indicates in-situ field vane performed at depth interval shown, corrected peak/residual shear strengths are provided. See Table II for details.
2. WOR = Weight of Drill Rods; WOH = Weight of Hammer.

HALEY & ALDRICH

TEST BORING REPORT

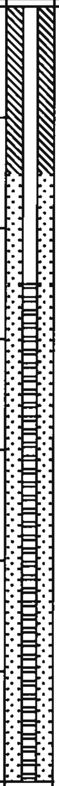
Boring No. HA08-12(OW)

Project	Maine Health/United Way Development, Portland, Maine	File No.	35611-000
Client	Maine Medical Center	Sheet No.	1 of 1
Contractor	Maine Test Borings, Inc.	Start	24 July 2008
		Finish	24 July 2008
		Driller	M. Porter
		H&A Rep.	O. Lawlor
		Elevation	11 +/-
		Datum	Portland City Datum
		Location	See Plan

	Casing	Sampler	Barrel
Type	NW	S	--
Inside Diameter (in.)	3.0	1 3/8	--
Hammer Weight (lb)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures

Rig Make & Model: Mobile Drill B-50 Bombardier
Bit Type: Roller Bit
Drill Mud: None
Casing: NW drive to 16.0 ft.
Hoist/Hammer: Winch Doughnut Hammer
PID Make & Model:

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	4 10 7 7	S1 17	0.0 2.0			SM	Medium dense, gray, silty SAND with gravel (SM), trace cinders, mps 0.5 in., no structure, no odor, moist -FILL-	5	5	10	25	35	20				
	5 11 15 9	S2 21	2.0 4.0			SM	Medium dense, gray, silty SAND with gravel (SM), intermixed with 15% cinders, mps 0.5 in., no structure, no odor, moist	5	5	5	25	40	20				
5	3 6 10 12	S3 18	4.0 6.0		5.0	SM SW	Medium dense, gray, silty SAND with gravel (SM), intermixed with 15% cinders, mps 0.5 in., no structure, no odor, moist Note: Groundwater encountered at 5.4 ft. Medium dense, light brown, well-graded SAND (SW), mps 0.25 in., no structure, no odor, moist	5 	5 	20 30	20 40	20 30	30 				
	7 11 12 11	S4 20	6.0 8.0			SW	Medium dense, light brown, well-graded SAND (SW), with occasional pockets of fine sand, mps 0.25 in., no structure, no odor, moist			30	40	30					
	7 7 15 15	S5 22	8.0 10.0			SW	Medium dense, gray, well-graded SAND (SW), mps 0.25 in., no structure, no odor, wet -FILL-			35	35	30					
10	4 4 3 2	S6 17	10.0 12.0			SW	Loose, gray, well-graded SAND (SW), mps 0.25 in., no structure, no odor, wet			35	35	30					
	3 4 4 3	NR	12.0 14.0		11.6	ML	Medium stiff, dark gray, SILT with sand (ML), mps 4.0 mm, no structure, no odor, moist Note: No Recovery. Probable shells in spoon tip, shells observed in wash water. -HARBOR BOTTOM DEPOSIT-				5	5	90				
15	1 3 3 3	S7 21	14.0 16.0		14.0	CL	Medium stiff, gray with occasional brown mottling, lean CLAY (CL), trace root fibers, mps 2.0 mm, no structure, no odor, moist -GLACIOMARINE DEPOSIT-						100				
					16.0		BOTTOM OF EXPLORATION Note: Observation well installed in completed borehole. See Well Installation Report for details.										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Depth (ft) to: Bottom of Hole	Depth (ft) to: Water
7/24/08		0.25	14.0	16.0	7.62

Sample ID

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram

☐	Riser Pipe
▤	Screen
░	Filter Sand
▒	Cuttings
■	Grout
▦	Concrete
▨	Bentonite Seal

Summary

Overburden (ft)	16.0
Rock Cored (ft)	0
Samples	7S

Boring No. HA08-12(OW)

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Plasticity**: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

H&A-TEST BORING-07-1 HA-LIB07-1R-POR-06-03-08.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\35611\FIELD PROGRAM\35611-000 TB GPJ 10 Sep 08

HALEY& ALDRICH

TEST BORING REPORT

Boring No. HA08-13

Project	Maine Health/United Way Development, Portland, Maine
Client	Maine Medical Center
Contractor	Maine Test Borings, Inc.

File No.	35611-000
Sheet No.	1 of 3
Start	29 July 2008
Finish	29 July 2008
Driller	M. Porter
H&A Rep.	O. Lawlor
Elevation	9 +/-
Datum	Portland City Datum
Location	See Plan

	Casing	Sampler	Barrel
Type	NW	S	NQ
Inside Diameter (in.)	3.0	1 3/8	2.0
Hammer Weight (lb)	300	140	-
Hammer Fall (in.)	30	30	-

Drilling Equipment and Procedures

Rig Make & Model: Mobile Drill B-50 Bombardier
Bit Type: Roller Bit
Drill Mud: None
Casing: NW drive to 46.6 ft.
Hoist/Hammer: Winch Doughnut Hammer
PID Make & Model:

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand				Field Test			
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0	3 7 11 11	S1 20	0.0 2.0		SP-SM	Medium dense, dark brown, poorly-graded SAND with silt (SP-SM), mps 1.0 in., intermixed with 10% cinders -FILL-			30	40	20	10				
	14 11 10 8	S2 6	2.0 4.0		SP	Medium dense, brown, poorly-graded SAND (SP), occasional silt pockets, mps 1-3/8 in., intermixed with 30% cinder and ash fragments			30	40	20	10				
5	2 2 2 1	S3 8	4.0 6.0		SP	Very loose, brown, poorly-graded SAND (SP), mps 1-3/8 in., intermixed with 30% cinder and ash fragments -FILL-		5	30	40	25					
	1 4 3 3	S4 6	6.0 8.0	6.0	GW	Loose, brown to red-brown, well-graded GRAVEL (GW), mps 1-3/8 in., intermixed with 10% wood and glass fragments, no structure, no odor, wet	30	35	10	10	10					
	5 3 1 1	S5 12	8.0 10.0		GP	Very loose, gray, brown, poorly-graded GRAVEL (GP), mps 1.0 in., trace glass and wood, no structure, no odor, wet -FILL-	30	40	10	10	5	5				
10	1 1 2 107	S6 15	10.0 12.0	10.0	ML	Very loose, gray, sandy SILT (ML), mps 0.25 in., trace wood and glass, shells, no structure, no odor, wet -FILL-			5	10	15	70				
						Note: Drilled through cobble from 12.0 to 12.4 ft.										
	2 3 3 4	S7 24	12.5 14.5	12.5	CL	Medium stiff, gray, lean CLAY (CL), mps 2.0 mm, no structure, no odor, moist, occasional brown mottles -GLACIOMARINE DEPOSIT-						100	N	M	M	
15																
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sample ID

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram

◫	Riser Pipe
▤	Screen
⁙	Filter Sand
▩	Cuttings
■	Grout
⁖	Concrete
▨	Bentonite Seal

Summary

Overburden (ft)	46.6
Rock Cored (ft)	9.4
Samples	10S, 2C

Boring No. HA08-13

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. HA08-13
File No. 35611-000
Sheet No. 2 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand				Field Test			
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
20	WOR WOR WOH WOH	S8 24	20.0 22.0		CL	Medium stiff, silty lean CLAY (CL), mps 2.0 mm, no structure, no odor, moist FV1 (20.3-21.0 ft), Su = ~670/170 psf -GLACIOMARINE DEPOSIT-						100	N	L	L	
25						Note: Trace fine gravel observed in wash water. FV2 (25.3-26.0 ft), Su = 590/240 psf										
30	WOR WOR WOR WOH	S9 24	30.0 32.0		CL	Soft, gray, silty lean CLAY (CL), mps 2.0 mm, occasional partings along sand seams, no odor, moist FV3 (30.3-31.0 ft), Su = 280/250 psf					5	95	N	L	L	
						-GLACIOMARINE DEPOSIT-										
35						FV4 (35.3-36.0 ft), Su = 720/220 psf										
						Note: Sand observed in wash water and on drill rods.										
				39.6												
40	4 2 2 4	S10 4	40.0 42.0		SP	Very loose, gray, poorly-graded SAND (SP), mps 4.0 mm, no structure, no odor, wet -GLACIOMARINE DEPOSIT-				45	50	5				
45																
				46.6		Note: Casing refusal at 46.6 ft. Advanced roller bit to 46.6 ft. Begin NQ rock core at 46.6 ft. See Core Boring Report for details. Notes: 1. FV1 (20.3-21.0 ft) indicates in-situ field vane performed at depth interval shown, corrected peak/residual shear strengths are provided. See Table II for details. 2. WOR = Weight of Drill Rods; WOH = Weight of Hammer.										

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA08-13

HALEY& ALDRICH

CORE BORING REPORT

Boring No. HA08-13
File No. 35611-000
Sheet No. 3 of 3

Depth (ft)	Drilling Rate (min./ft)	Run No.	Run Depth (ft)	Recovery/RQD in.	Recovery/RQD %	Weath- ering	Elev./ Depth (ft)	Visual Description and Remarks
								SEE TEST BORING REPORT FOR OVERBURDEN DETAILS
50	2 2 4 7 3	C1	46.6 51.0	40 0	76 0			Moderately hard, moderate to highly weathered, dark green, aphanitic CHLORITE SCHIST. Foliation is extremely thin, high angle. Primary joint set is parallel to foliation, high angle, very close to undulating, fresh to discolored with pyrite, very tight to tight
55	2 2 2 2 2	C2	51.0 56.0	60 42	100 70		51.0	Moderately hard, slightly weathered to fresh, dark green, aphanitic CHLORITE SCHIST. Foliation is extremely thin, high angle to vertical. Primary joint set is parallel to foliation, high angle to vertical, close to very close, smooth to polished, stepped to undulating, fresh to discolored with pyrite, very tight to tight. Occasional extremely thin to thin, high angle to vertical quartz veins
							56.0	BOTTOM OF EXPLORATION
60								
65								
70								
75								

2008 Test Pit Logs for
Proposed MaineHealth/United Way Development
(see Reference 5)

HALEY& ALDRICH	TEST PIT LOG	Test Pit No. TP-201

Project Maine Health / United Way Development
Location Somerset & Chestnut Streets, Portland, Maine
Client Maine Medical Center
Contractor Environmental Projects, Inc.
Equipment Used Komatsu PC 35 MR

File No. 35611-000
H&A Rep B. Steinert
Date 20 October 2008
Weather Sunny, 50°

Ground El.: 11 +/-
El. Datum: Portland City Datum
Location: See Plan
Groundwater depths/entry rates (in./min.): 4.6 gal/min

Depth (ft)	Sample ID	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Field Tests Toughness	Field Tests Plasticity	Field Tests Strength
0			SW- SM	Gray-brown, well-graded SAND with silt and gravel (SW-SM), mps 8 in., no structure, no odor, dry, bricks, concrete, wood throughout, railroad ties and steel tracks in north side of test pit at ~1.5 ft -FILL-	10	15	15	35	15	10				
2		2.0	SP	Black, poorly graded SAND with silt (SP), mps 4.75 mm, no structure, no odor, dry, some coal/ash fragments, trace organics -FILL-			5	50	30	15				
4		3.5	SP	Tan to yellow-brown, poorly graded SAND (SP), mps 4.75 mm, no structure, no odor, moist to wet with depth -FILL-			10	60	20	10				
6														
8		8.0		-BOTTOM OF EXCAVATION-										

Obstructions: None. Miscellaneous debris (bricks, wood, granite pavers), rail timbers, tracks present throughout.

Remarks: Water observed seeping into test pit excavation at approximately 8 ft below existing ground surface.

Field Tests

Dilatancy	R - Rapid S - Slow N - None
Toughness	L - Low M - Medium H - High
Plasticity	N - Nonplastic L - Low M - Medium H - High
Dry Strength	N - None L - Low M - Medium H - High V - Very High

Standing Water in Completed Pit
at depth 6.5 ft
measured after 31 min. hours elapsed

Boulders

Diameter (in.)	Number		Approx. Vol. (cu.ft)
12 to 24	NA	=	NA
over 24	NA	=	NA

Test Pit Dimensions (ft)
Pit Length x Width (ft) 6 x 3
Pit Depth (ft) 8.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST PIT LOG

Test Pit No. TP-202

Project Maine Health / United Way Development
Location Somerset & Chestnut Streets, Portland, Maine
Client Maine Medical Center
Contractor Environmental Projects, Inc.
Equipment Used Komatsu PC 35 MR

File No. 35611-000
H&A Rep B. Steinert
Date 20 October 2008
Weather Sunny, 50°

Ground El.: 12 +/-
El. Datum: Portland City Datum
Location: See Plan
Groundwater depths/entry rates (in./min.): 3.7 gal/min

Depth (ft)	Sample ID	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Field Tests Toughness	Field Tests Plasticity	Field Tests Strength
0			SC	Dark brown, clayey SAND (SC), mps 2 in., no structure, slight creosote-like odor, moist, brick and porcelain fragments present, trace organics (rootlets) -FILL-		5	10	30	40	15				
2														
		3.5	SP- SM	Black, poorly graded SAND with silt (SP-SM), mps 2 mm, no structure, organic odor, moist, rootlets throughout, probable former topsoil				10	70	20				
4		4.0	SW	Light brown, well-graded SAND with gravel (SW), mps 3 in., no structure, no odor, moist	5	15	30	25	15	10				
		4.5	SM	Black, silty SAND with gravel (SM), mps 2 in., no structure, no odor, moist to wet, trace organics, brick bragments, clinker-like material -FILL-		15	15	35	15	20				
6														
		6.5	SP	Tan to yellow-brown, poorly graded SAND (SP), mps 4.75 mm, no structure, no odor, moist to wet -FILL-			10	60	15	5				
8														
10														
		11.0		-BOTTOM OF EXCAVATION-										

Obstructions: NA

Remarks: Water observed seeping into test pit excavation at approximately 11 ft below existing ground surface.

Field Tests

Dilatancy	R - Rapid S - Slow N - None
Toughness	L - Low M - Medium H - High
Plasticity	N - Nonplastic L - Low M - Medium H - High
Dry Strength	N - None L - Low M - Medium H - High V - Very High

Standing Water in Completed Pit
at depth 8.0 ft
measured after 18 min. hours elapsed

Boulders

Diameter (in.)	Number		Approx. Vol. (cu.ft)
12 to 24	NA	=	NA
over 24	NA	=	NA

Test Pit Dimensions (ft)
Pit Length x Width (ft) 6 x 3
Pit Depth (ft) 11.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HALEY& ALDRICH

TEST PIT LOG

Test Pit No. TP-203

Project Maine Health / United Way Development
Location Somerset & Chestnut Streets, Portland, Maine
Client Maine Medical Center
Contractor Environmental Projects, Inc.
Equipment Used Komatsu PC 35 MR

File No. 35611-000
H&A Rep B. Steinert
Date 20 October 2008
Weather Sunny, 50°

Ground El.: 9 +/-
El. Datum: Portland City Datum
Location: See Plan
Groundwater depths/entry rates (in./min.): 4.6 gal/min

Depth (ft)	Sample ID	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel		Sand				Field Tests			
					% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0			SW- SM	Gray-brown, well-graded SAND with silt (SW-SM), mps 0.75 in., no structure, no odor, moist, trace brick fragments -FILL-		5	25	45	15	10				
2		2.0	SP	Tan to yellow-brown, poorly graded SAND (SP), mps 4.75 mm, no structure, no odor, moist			10	60	20	10				
		2.7	SW	Dark brown to black, well-graded SAND with gravel (SW), mps 3 in., no structure, no odor, moist to wet	15	10	25	35	10	5				
4		3.5	SW- SM	Brown, well-graded SAND with silt (SW-SM), mps 4 in., no structure, no odor, moist, cinders, ash, bricks, concrete fragments present -FILL- Note: Gray, lean CLAY with bricks and little fine to medium sand observed in western third of test pit.			35	20	30	15				
6														
8														
10														
		11.0		-BOTTOM OF EXCAVATION-										

Obstructions: NA

Remarks: Water observed seeping into test pit excavation at approximately 11 ft below existing ground surface.

Field Tests

Dilatancy	R - Rapid S - Slow N - None
Toughness	L - Low M - Medium H - High
Plasticity	N - Nonplastic L - Low M - Medium H - High
Dry Strength	N - None L - Low M - Medium H - High V - Very High

Standing Water In Completed Pit

at depth	10.5	ft
measured after	17 min.	hours elapsed

Boulders

Diameter (in.)	Number		Approx. Vol. (cu.ft)
12 to 24	NA	=	NA
over 24	NA	=	NA

Test Pit Dimensions (ft)

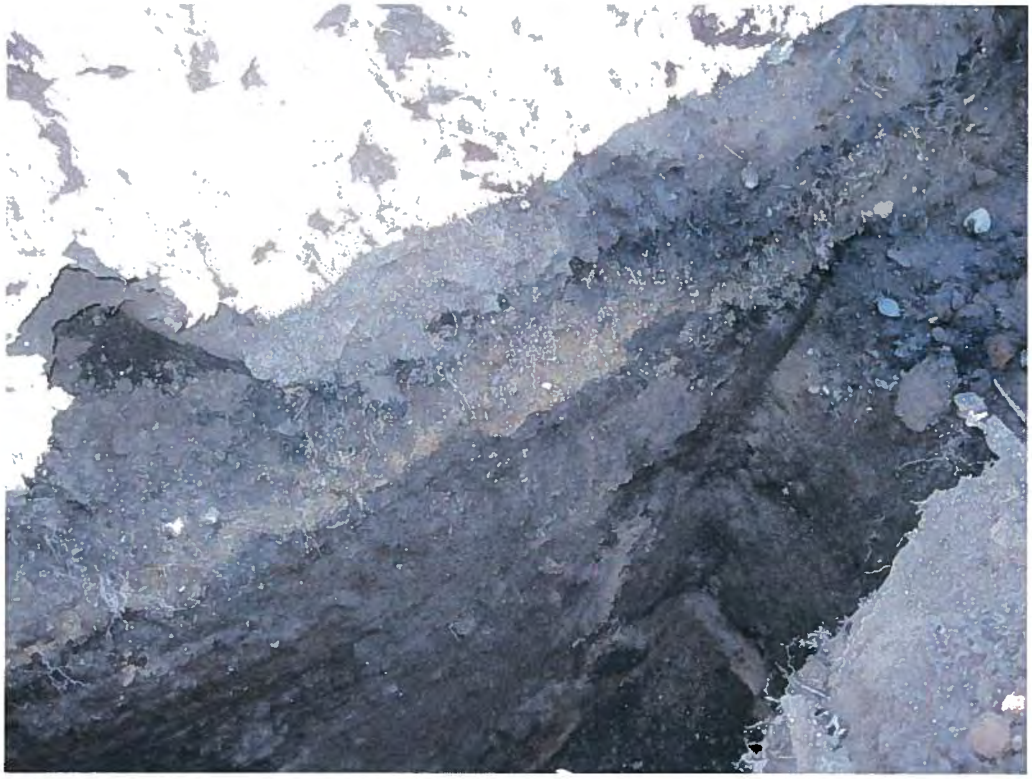
Pit Length x Width (ft) 7 x 3
Pit Depth (ft) 11.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HA TESTPIT-07-1 HA-LIB07-1R-POR-06-03-08.GLB HA-TP07-1.GDT G:\PROJECTS\35611\FIELD PROGRAM\35611 TP201-203.GPJ 4 Dec 08

Photograph 1. In-situ fill soils encountered in TP-201, looking northwest (10/20/08).

Photograph 2. In-situ fill soils and groundwater encountered in TP-201, looking northwest (10/20/08).



Photograph 3. In-situ fill soils encountered in TP-202, looking north (10/20/08).

Photograph 4. In-situ fill soils and groundwater encountered in TP-202, looking southeast (10/20/08).

2013 Test Boring Logs for Proposed Somerset Street Improvements

(see Reference 6)

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA13-1

Project	Proposed Improvements to Somerset Street, Portland, Maine	File No.	39537-000
Client	City of Portland	Sheet No.	1 of 1
Contractor	Northern Test Boring	Start	January 31, 2013
		Finish	January 31, 2013
		Driller	M. Nadeau
		H&A Rep.	M. Snow

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	--	Rig Make & Model: Diedrich D50
Inside Diameter (in.)	2.5	1.375	--	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb)	--	140	-	Casing: HSA Spun to 18.0 ft
Hammer Fall (in.)	--	30	-	Hoist/Hammer: / Automatic Hammer PID Make & Model: N/A

Elevation 7.5 (approx.)
Datum Portland City Datum
Location See Plan

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				0.2		-BITUMINOUS CONCRETE-										
	9 10 12 5	S1 12	0.5 2.5		SP	Medium dense, brown, poorly-graded SAND with gravel (SP), plastic and brick fragments, mps 2 in., no odor, dry to moist	15	20	5	30	25	5				
	2 3 8 4	S2 6	2.5 4.5		SM	Medium dense, brown to gray with occasional rust-brown, silty SAND (SM) with coal fragments, mps 1.5 in., no odor, moist -FILL-		5	10	40	30	15				
5	2 4 4 3	S3 10	4.5 6.5		SM	Loose, brown to gray-brown, silty SAND with gravel (SM), trace ash, coal, mps 2.0 in., no odor, wet	5	25	20	15	20	15				
	2 4 4 5	S4 16	6.5 8.5		SM	Loose, gray-brown, silty SAND with gravel (SM), mps 1.5 in., slight petroleum-like odor, wet		25		30	30	15				
	1 1 1	S5 12	8.5 10.0	8.5	ML	Very soft, dark brown-gray, sandy SILT with organics (ML), trace shells, mps 0.42 mm, no odor, wet					30	70				
10	1 1 1 1	S6 22	10.0 12.0		ML	Very soft, dark brown-gray, sandy SILT (ML) with organics, shells, mps 0.42 mm, no odor, wet					30	70				
	1 1 2 2	S7 24	12.0 14.0		ML	Soft, dark brown-gray, SILT to sandy SILT (ML) with organics, shells, mps 0.42 mm, no odor, wet -HARBOR BOTTOM DEPOSIT-					30	70				
15	1 2 2 3	S8 24	14.0 16.0	14.0	CL	Soft, gray, lean CLAY (CL), trace organics (black streaks), shells, mps 0.075 mm						100				
	1 1 1 1	S9 24	16.0 18.0		CL	Very soft, gray, lean CLAY (CL), mps 0.075 mm, no odor, wet -MARINE DEPOSIT-						100				
	1 1 WOH 1	S10 24	18.0 20.0		CL	Very soft, gray, lean CLAY (CL), black organics, mps 0.075 mm, no odor, wet						100				
20				20.0		Bottom of Exploration 20.0 ft - No Refusal										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Depth (ft) to: Bottom of Hole	Depth (ft) to: Water
1/31/13	09:30	0	Caved	2.0	--

Sample ID

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample
C - Rock Core Sample

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (ft)	20.0
Rock Cored (ft)	0.0
Samples	10S

Boring No. HA13-1

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Plasticity**: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. HA13-2

Project	Proposed Improvements to Somerset Street, Portland, Maine
Client	City of Portland
Contractor	Northern Test Boring

File No.	39537-000
Sheet No.	1 of 1
Start	January 31, 2013
Finish	January 31, 2013
Driller	M. Nadeau
H&A Rep.	M. Snow
Elevation	8.0 (approx.)
Datum	Portland City Datum
Location	See Plan

	Casing	Sampler	Barrel
Type	HSA	S	--
Inside Diameter (in.)	2.5	1.375	--
Hammer Weight (lb)	--	140	-
Hammer Fall (in.)	--	30	-

Drilling Equipment and Procedures

Rig Make & Model: Diedrich D50
Bit Type: Cutting Head
Drill Mud: None
Casing: HSA Spun to 18.0 ft
Hoist/Hammer: / Automatic Hammer
PID Make & Model: N/A

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					0.3	-BITUMINOUS CONCRETE-										
	21 60 51 30	S1 18	0.4 2.4	0.2	SW/GW	Very dense (frozen), brown, well-graded SAND and GRAVEL (SW/GW), mps 2.0 mm, no odor, moist	20	20	20	20	20					
	6 8 8 11	S2 12	2.4 4.4		SM	Medium dense, brown and gray, silty SAND with gravel (SM), brick and coal fragments, mps 1.0 in., no odor, wet -FILL-	10	25	15	20	15					
5	5 8 6 7	S3 12	4.4 6.4		GM	Medium dense, orange, BRICK with silty gravel (GM), mps 2.0 mm, no odor, wet		10	5	35	35	15				
	3 4 5 7	S4 3	6.4 8.4	6.4	SM	WOOD with gray silty sand (SM), brick pieces, mps 0.5 in., no odor, wet -FILL-					30	70				
	1 1 1	S5 19	8.4 10.0	8.4	ML	Very soft, dark gray-brown, sandy SILT (ML) with organics, shells, mps 0.42 mm, no odor, wet						100				
10	1 WOH 2 2	S6 22	10.0 12.0			-HARBOR BOTTOM DEPOSIT-										
				11.0	CL	Soft, brown-gray, mottled lean CLAY (CL), mps 0.075 mm, no odor, wet						100				
	2 2 2 2	S7 24	12.0 14.0		CL	Soft, brown-gray, mottled lean CLAY (CL), mps 0.075 mm, no odor, wet -MARINE DEPOSIT-						100				
15	1 1 1 2	S8 24	14.0 16.0		CL	Soft, brown-gray, mottled lean CLAY (CL), mps 0.075 mm, no odor, wet						100				
				15.5	CL	Note: Auger plug stuck at 16.0 ft. Advance to 18.0 ft. -MARINE DEPOSIT-										
	WOH WOH 1 1	S9 24	18.0 20.0		CL	Very soft, gray, lean CLAY (CL), black organics, mps 0.075 mm, no odor, wet						100				
20				20.0		Bottom of Exploration 20.0 ft - No Refusal										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water
1/31/13	10:40	0	Caved	1.9	--

Sample ID

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample
C - Rock Core Sample

Well Diagram

▥	Riser Pipe
▤	Screen
⁘	Filter Sand
▨	Cuttings
▩	Grout
◬	Concrete
▧	Bentonite Seal

Summary

Overburden (ft)	20.0
Rock Cored (ft)	0.0
Samples	9S

Boring No. HA13-2

Field Tests:
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

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TEST BORING REPORT

Boring No. HA13-3

Project	Proposed Improvements to Somerset Street, Portland, Maine	File No.	39537-000
Client	City of Portland	Sheet No.	1 of 1
Contractor	Northern Test Boring	Start	January 31, 2013
		Finish	January 31, 2013
		Driller	M. Nadeau
		H&A Rep.	M. Snow
		Elevation	7.5 (approx.)
		Datum	Portland City Datum
		Location	See Plan

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	--	Rig Make & Model: Diedrich D50
Inside Diameter (in.)	2.5	1.375	--	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb)	--	140	-	Casing: HSA Spun to 18.0 ft
Hammer Fall (in.)	--	30	-	Hoist/Hammer: / Automatic Hammer PID Make & Model: N/A

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0				0.3		-BITUMINOUS CONCRETE-										
	25 49 36 15	S1 20	0.4 2.4		SW	Very dense (frozen), brown, well-graded SAND with gravel (SW), mps 1.0 in., no odor, moist	5	15	25	25	25	5				
	4 4 3 3	S2 18	2.4 4.4		SM	Loose, brown, silty SAND (SM), brick fragments, mps 1.0 in., no odor, moist to wet -FILL-	5	10	10	30	30	15				
5	2 2 3 3	S3 8	4.4 6.4		ML	Medium stiff, dark gray-brown SILT with sand (ML), with wood pieces, organics, mps 1.0 in., no odor, wet		10		15	15	60				
	2 1 2 1	S4 10	6.4 8.4		ML	Medium stiff, dark gray-brown, SILT with sand (ML), with wood pieces, organics, mps 1.0 in., no odor, wet		10		15	15	60				
	1 1 WOH	S5 18	8.4 10.0	8.0	ML	Soft, dark gray-brown, sandy SILT (ML) with organics, trace shells, mps 2.0 mm, no odor, wet -HARBOR BOTTOM DEPOSIT-					30	70				
10	1 WOH 2 2	S6 24	10.0 12.0		ML	Soft, dark gray-brown, sandy SILT (ML) with organics, trace shells, mps 2.0 mm, no odor, wet					30	70				
	1 1 2 1	S7 24	12.0 14.0	11.0	CL	Soft, brown-gray, mottled lean CLAY (CL) with frequent gray fine sand layers -MARINE DEPOSIT-					15	85				
15	1 WOH 1 1	S8 24	14.0 16.0	13.5	CL	Very soft, dark gray, lean CLAY (CL) with frequent gray fine sand layers, mps 0.42 mm, no odor, wet -MARINE DEPOSIT-					15	85				
	WOH 1 1 1	S9 24	16.0 18.0		CL	Very soft, dark gray, lean CLAY (CL) with occasional fine sand layers, black organics, trace shells, mps 0.42 mm, no odor					10	90				
	1 WOH 1 WOH	S10 24	18.0 20.0		CL	Very soft, dark gray, lean CLAY (CL) with black organics, trace shells, mps 0.075 mm, no odor, wet						100				
20				20.0		Bottom of Exploration 20.0 ft - No Refusal										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Depth (ft) to: Bottom of Hole	Water
1/31/13	11:45	0	Caved	1.5	--

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample
C - Rock Core Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (ft)	20.0
Rock Cored (ft)	0.0
Samples	10S

Boring No. HA13-3

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Plasticity**: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA13-4

Project Proposed Improvements to Somerset Street, Portland, Maine
Client City of Portland
Contractor Northern Test Boring

File No. 39537-000
Sheet No. 1 of 1
Start January 31, 2013
Finish January 31, 2013
Driller M. Nadeau
H&A Rep. M. Snow
Elevation 9.0 (approx.)
Datum Portland City Datum
Location See Plan

	Casing	Sampler	Barrel
Type	HSA	S	--
Inside Diameter (in.)	2.5	1.375	--
Hammer Weight (lb)	--	140	-
Hammer Fall (in.)	--	30	-

Drilling Equipment and Procedures

Rig Make & Model: Diedrich D50
Bit Type: Cutting Head
Drill Mud: None
Casing: HSA Spun to 18.0 ft
Hoist/Hammer: / Automatic Hammer
PID Make & Model: N/A

						VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	Gravel		Sand				Field Test			
Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	(Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
0						-BITUMINOUS CONCRETE-										
	31 66 68 26	S1 20	0.5 2.5	0.3	SW	Very dense (frozen), brown, well-graded SAND with gravel (SW), mps 1.0 in., no odor, moist	5	10	15	35	30	5				
	11 10 9 6	S2 12	2.5 4.5		SW-SM	Medium dense, brown, well-graded SAND with gravel (SW-SM), mps 2.0 in., no odor, moist -FILL-	10	20	20	20	20	10				
5	5 5 3 3	S3 16	4.5 6.5		SM	Loose, dark brown to brown, silty SAND with gravel (SM), mps 2.0 in., no odor, moist	15	15	10	25	20	15				
	4 5 3 5	S4 5	6.5 8.5	6.0	ML/SM	Loose, dark brown, sandy SILT (ML) to silty SAND (SM), mps 1.0 in., no odor, wet, 50% of sample is brick -FILL-	5 5				40 55	55 40				
	2 3 2 2	S5 18	8.5 10.5		SM	Loose, dark brown, silty SAND with gravel (SM), mps 2.0 in., no odor, wet	10	5	10	30	30	15				
10				9.5	ML	Medium stiff, dark gray-brown, SILT (ML) with organics, trace shells, wood pieces, mps 0.25 in., no odor, wet					15	85				
	1 1 1	S6 16	10.5 12.0		ML	Very soft, dark brown, sandy SILT to SILT (ML) with organics, shells, mps 0.42 mm, no odor, wet					30 10	70 90				
	1 1 1 2	S7 24	12.0 14.0		ML	Very soft, dark gray-brown, SILT (ML) with organics, shells, mps 0.42 mm, no odor, wet -HARBOR BOTTOM DEPOSIT-					5	90				
15	1 2 1 2	S8 24	14.0 16.0	13.3	CL	Very soft, brown-gray, mottled lean CLAY (CL), mps 0.075 mm, no odor, wet -MARINE DEPOSIT-						100				
	WOH WOH WOH WOH	S9 24	16.0 18.0	15.5	CL CL	Soft, dark gray, lean CLAY (CL) with black organics, mps 0.075 mm, no odor, wet Very soft, dark gray, lean CLAY (CL) with black organics, mps 0.075 mm, no odor, wet -MARINE DEPOSIT-						100 100				
	WOH WOH WOH 1	S10 24	18.0 20.0		CL	Very soft, dark gray, lean CLAY (CL) with black organics, mps 0.075 mm, no odor, wet						100				
20				20.0		Bottom of Exploration 20.0 ft - No Refusal										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water
1/31/13	12:55	0	Caved	3.5	--

Sample ID

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample
C - Rock Core Sample

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (ft)	20.0
Rock Cored (ft)	0.0
Samples	10S

Boring No. HA13-4

Field Tests:
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA13-5

Project	Proposed Improvements to Somerset Street, Portland, Maine
Client	City of Portland
Contractor	Northern Test Boring

File No.	39537-000
Sheet No.	1 of 1
Start	January 31, 2013
Finish	January 31, 2013
Driller	M. Nadeau
H&A Rep.	M. Snow
Elevation	10.0 (approx.)
Datum	Portland City Datum
Location	See Plan

	Casing	Sampler	Barrel
Type	HSA	S	--
Inside Diameter (in.)	2.5	1.375	--
Hammer Weight (lb)	--	140	-
Hammer Fall (in.)	--	30	-

Drilling Equipment and Procedures

Rig Make & Model: Diedrich D50

Bit Type: Cutting Head

Drill Mud: None

Casing: HSA Spun to 18.0 ft

Hoist/Hammer: / Automatic Hammer

PID Make & Model: N/A

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0						-BITUMINOUS CONCRETE-										
	24 29 39 30	S1 20	0.5 2.5	0.2	SP	Very dense, brown, well-graded SAND with gravel (SW), mps 1.0 in., no odor, dry	10	15	10	25	25	5				
	10 10 7 3	S2 12	2.5 4.5		SM	Medium dense, silty SAND with gravel (SM), with brick fragments, mps 1.0 in., no odor, moist -FILL-	10	10	20	25	20	15				
5	3 3 3 14	S3 12	4.5 6.5		SW-SM	Loose, brown to dark brown, well-graded SAND with gravel (SW-SM) with wood (2 in.), decomposed brick, ash, mps 1.0 in., no odor, moist to wet	10	10	20	30	20	10				
	3 3 5 5	S4 14	6.5 8.5		SW	Lose, dark brown-black, silty SAND with gravel (SW), decomposed brick, mps 0.5 in., no odor, wet		20	25	25	20	15				
	4 3 2 3	S5 18	8.5 10.5		SW	Loose, dark brown-black, silty SAND with gravel (SW), decomposed brick, mps 1.0 in., no odor, wet		20	25	25	20	15				
10				9.5	ML	Medium stiff, dark brown-black, SILT (ML) with organics, shell fragments, mps 0.075 mm, no odor, wet						100				
	2 1 2	S6 16	10.5 12.0		ML	Soft, black, sandy SILT (ML) with organics, shell fragments, mps 0.42 mm, no odor, wet -HARBOR BOTTOM DEPOSIT-					30	70				
	1 1 2 4	S7 24	12.0 14.0		ML	Soft, black to dark gray, sandy SILT (ML) with organics, shells, mps 0.42 mm, no odor, wet										
15	2 2 2 2	S8 22	14.0 16.0	14.0	CL	Soft, gray, lean CLAY (CL), mps 0.075 mm, no odor, wet						100				
	WOH 1 1 1	S9 24	16.0 18.0		CL	Very soft, gray, lean CLAY (CL), mps 0.42 mm, no odor, wet -MARINE DEPOSIT-					5	95				
	WOH WOH 1 1	S10 24	18.0 20.0		CL	Very soft, gray, lean CLAY (CL), mps 0.075 mm, no odor, wet						100				
20				20.0		Bottom of Exploration 20.0 ft - No Refusal										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water
1/31/13	14:00	0	Caved	2.0	--

Sample ID

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample
C - Rock Core Sample

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (ft)	20.0
Rock Cored (ft)	0.0
Samples	10S

Boring No. HA13-5

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Plasticity**: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA13-6

Project Proposed Improvements to Somerset Street, Portland, Maine
Client City of Portland
Contractor Northern Test Boring

File No. 39537-000
Sheet No. 1 of 1
Start January 31, 2013
Finish January 31, 2013
Driller M. Nadeau
H&A Rep. M. Snow

Elevation 10.0 (approx.)
Datum Portland City Datum
Location See Plan

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	--	Rig Make & Model: Diedrich D50
Inside Diameter (in.)	2.5	1.375	--	Bit Type: Cutting Head Drill Mud: None
Hammer Weight (lb)	--	140	-	Casing: HSA Spun to 18.0 ft
Hammer Fall (in.)	--	30	-	Hoist/Hammer: / Automatic Hammer PID Make & Model: N/A

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0						-BITUMINOUS CONCRETE-										
	16 30 48 21	S1 18	0.5 2.5	0.2	SW	Very dense (frozen), brown, well-graded SAND with gravel (SW), mps 1.0 in., no odor, dry	10	10	20	30	25	5				
	12 15 15 12	S2 18	2.5 4.5		SW-SM	Dense, brown, well-graded SAND with gravel (SW-SM), mps 2.0 in., no odor, frozen to moist -FILL-	10	15	20	25	20	10				
5	6 21 16 5	S3 14	4.5 6.5		SM	Dense, brown-gray, silty SAND (SM), mps 0.5 in., no odor, moist		5	10	35	35	15				15
	1 1 2 3	S4 12	6.5 8.5		SM	Loose, dark gray-brown, silty SAND with gravel (SM), mps 1.0 in., no odor, wet	5	15	5	30	30	15				
	1 2 2	S5 10	8.5 10.0	8.5	ML	Soft, dark gray-black, sandy SILT (ML) with organics, shells, mps 0.42 mm, slight organic odor, wet					30	70				
10	1 2 2 3	S6 14	10.0 12.0		ML	Soft, dark gray-black, sandy SILT (ML) with organics, shells, mps 1.5 in. (1 gravel piece), slight organic odor, wet -HARBOR BOTTOM DEPOSIT-					30	70				
	2 1 2 3	S7 18	12.0 14.0		ML	Soft, dark gray-brown, SILT (ML), with shells, mps 0.42 mm, no odor, wet					30	70				
				13.5												
15	5 4 5 7	S8 14	14.0 16.0		CL	Medium stiff, brown-gray, mottled lean CLAY (CL), mps 0.075 mm, no odor, wet -MARINE DEPOSIT-						100				
	1 2 1 2	S9 23	16.0 18.0	16.5	CL	Soft, dark gray, lean CLAY (CL), mps 0.075 mm, no odor, wet -MARINE DEPOSIT-						100				
	WOH 1 1 1	S10 24	18.0 20.0		CL	Very soft, dark gray, lean CLAY (CL), mps 0.075 mm, no odor, wet						100				
20				20.0		Bottom of Exploration 20.0 ft - No Refusal										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Depth (ft) to: Bottom of Hole	Depth (ft) to: Water
1/31/13	15:15	0	Caved	1.25	--

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample
C - Rock Core Sample

Well Diagram
▥ Riser Pipe
▤ Screen
⁘ Filter Sand
▨ Cuttings
▩ Grout
△ Concrete
▧ Bentonite Seal

Summary
Overburden (ft) 20.0
Rock Cored (ft) 0.0
Samples 10S

Boring No. HA13-6

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Plasticity**: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

APPENDIX B

Observation Well Installation and Groundwater Monitoring Reports

2006 Observation Well Installation and
Groundwater Monitoring Reports for
Proposed Bayside Parking Garage
(see Reference 2)

HALEY & ALDRICH

OBSERVATION WELL INSTALLATION REPORT

Well No.

Boring No. HA06-2(OW)

PROJECT	Proposed Bayside Parking Garage & Master Planning	H&A FILE NO.	33538-000
LOCATION	Portland, Maine	PROJECT MGR.	W. Chadbourne
CLIENT	Scott Simons Architects	FIELD REP.	B. Steinert
CONTRACTOR	Maine Test Borings, Inc.	DATE INSTALLED	8/17/2006
DRILLER	P. Hatch	WATER LEVEL	

Ground El. 9.0 +/- ft

El. Datum Portland City

Location See Plan

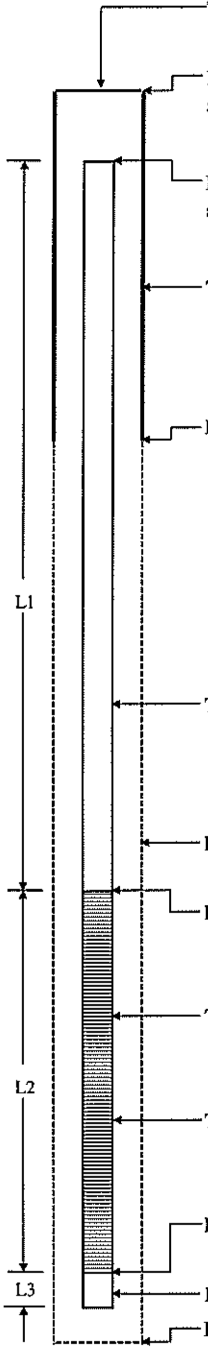
☑ Guard Pipe

☐ Roadway Box

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL
0.0	0.0
FILL	BENTONITE CHIPS
	3.0
11.3	
HARBOR BOTTOM DEPOSIT	
15.0	
	FILTER SAND
MARINE CLAY	
34.5	
MARINE SAND	15.0
	BENTONITE CHIPS
	18.0
40.0	
WEATHERED BEDROCK	FILTER SAND
47.2	47.2

(Bottom of Exploration)

(Numbers refer to depth from ground surface in feet)



Type of protective cover/lock: Steel Lock / Cap

Height of top of guard pipe above ground surface. 3.6 ft

Height of top of riser pipe above ground surface 3.4 ft

Type of protective casing: Steel Guardpipe

Length 5.2 ft

Inside Diameter 3.25 in

Depth of bottom of guard pipe/roadway box 1.6 ft

Type of Seals	Top of Seal (ft)	Thickness (ft)
Concrete	-	-
Bentonite Seal	0.0	3.0

Type of riser pipe: Schedule 40 PVC

Inside diameter of riser pipe 2.0 in

Type of backfill around riser Filter Sand / Bentonite Chips

Diameter of borehole 4.0 in

Depth to top of well screen 5.0 ft

Type of screen Slotted Schedule 40 PVC

Screen gauge or size of openings 0.010 in

Diameter of screen 2.0 in

Type of backfill around screen Filter Sand

Depth of bottom of well screen 15.0 ft

Bottom of Silt trap 15.0 ft

Depth of bottom of borehole 47.2 ft

(Not to Scale)

8.4 ft + 10 ft + 0 ft = 18.4 ft

Riser Pay Length (L1) + Length of screen (L2) + Length of silt trap (L3) = Pay length

COMMENTS:

Form 2007

HALEY & ALDRICH

GROUNDWATER MONITORING REPORT

OW/PZ NUMBER
HAO6-2(OW)
Page 1 of 1

PROJECT	Proposed Bayside Parking Garage & Master Planning	**H&A FILE NO.**	33538-000
LOCATION	Portland, Maine	**PROJECT MGR.**	W. Chadbourne
CLIENT	Scott Simons Architects	**FIELD REP.**	B. Steinert
CONTRACTOR	Maine Test Borings, Inc.	**DATE**	8/17/2006

ELEVATION SUBTRAHEND 9.0 (Portland City Datum)

Date	Time	Elapsed Time (days)	Depth of Water from Ground Surface	Elevation of Water	Remarks	Read By
8/17/2006	12:30	0	-0.8	9.8	bailed out after reading (bailer)	bcs
8/17/2006	12:30	0	3.8	5.2		bcs
8/21/2006	14:10	4	2.7	6.3	bailed out after reading (wale pump)	bcs
8/21/2006	14:25	4	2.6	6.4		bcs
8/22/2006	16:45	5	2.7	6.3		bcs
8/23/2006	9:45	6	2.8	6.2		bcs
8/25/2006	9:20	8	2.9	6.1		bcs
8/28/2006	6:30	11	2.8	6.2		bcs
8/30/2006	7:00	13	2.7	6.3		bcs
8/31/2006	7:35	14	2.8	6.2		bcs
9/7/2006	7:40	21	2.7	6.3		bcs
9/8/2006	16:30	22	2.9	6.2	clear water surface in bailer	mls
9/18/2006	7:20	32	3.1	5.9		bcs

2008 Observation Well Installation and Groundwater Monitoring Reports for Proposed MaineHealth/United Way Development

(see Reference 4)

HALEY& ALDRICH

OBSERVATION WELL INSTALLATION REPORT

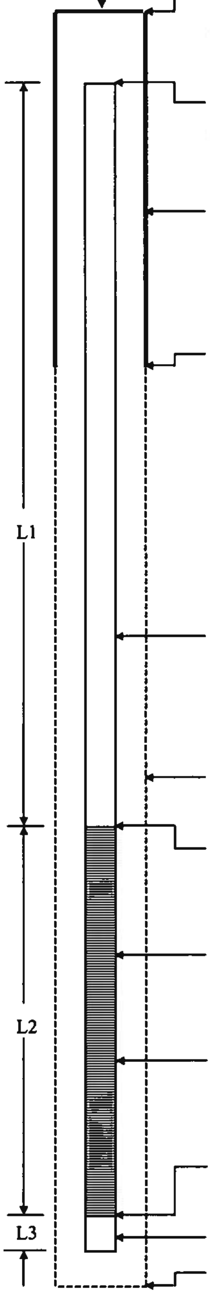
Well No. HA08-5(OW)
Boring No. HA08-5(OW)

PROJECT	Maine Health/United Way Development	**H&A FILE NO.**	35611-000
LOCATION	Portland, Maine	**PROJECT MGR.**	W. Chadbourne
CLIENT	Maine Medical Center	**FIELD REP.**	O. Lawlor
CONTRACTOR	Maine Test Borings, Inc.	**DATE INSTALLED**	8/1/2008
DRILLER	M. Porter	**WATER LEVEL**	-

Ground El. 9.0 +/- ft
El. Datum Portland City
Location See Plan
☑ **Guard Pipe**
☐ **Roadway Box**

SOIL/ROCK CONDITIONS	**BOREHOLE BACKFILL**
FILL	BENTONITE
	3.0
	FILTER SAND
10.5	
HARBOR BOTTOM DEPOSIT	
13.0	
	15.0
GLACIOMARINE DEPOSITS	DRILL CUTTINGS
53.0	
GLACIAL TILL	
63.8	
BEDROCK	
65.5	65.5

(Bottom of Exploration)
(Numbers refer to depth from ground surface in feet)



Type of protective cover/lock Locked Cover
Height of top of guard pipe above ground surface 3.0 ft
Height of top of riser pipe above ground surface 2.8 ft
Type of protective casing: Steel Guard Pipe
Length 5.0 ft
Inside Diameter 3.0 in
Depth of bottom of guard pipe/roadway box ft

Type of Seals	**Top of Seal (ft)**	**Thickness (ft)**
Concrete	-	-
Bentonite Seal	0.0	3.0

Type of riser pipe: Schedule 40 PVC
Inside diameter of riser pipe 2.0 in
Type of backfill around riser Filter Sand/Bentonite
Diameter of borehole 3.0 in
Depth to top of well screen 5.0 ft
Type of screen Mach. Slotted Sch. 40 PVC
Screen gauge or size of openings 0.010 in
Diameter of screen 2.0 in
Type of backfill around screen Filter Sand
Depth of bottom of well screen 15.0 ft
Bottom of Silt trap - ft
Depth of bottom of borehole 65.5 ft

(Not to Scale)

7.8 ft	+	10 ft	+	0 ft	=	17.8 ft	
Riser Pay Length (L1)		Length of screen (L2)		Length of silt trap (L3)		Pay length	

COMMENTS:

Form 2007

HALEY&
ALDRICH

GROUNDWATER MONITORING REPORT

OW/PZ NUMBER HA08-5(OW)

Page 1 **of** 1

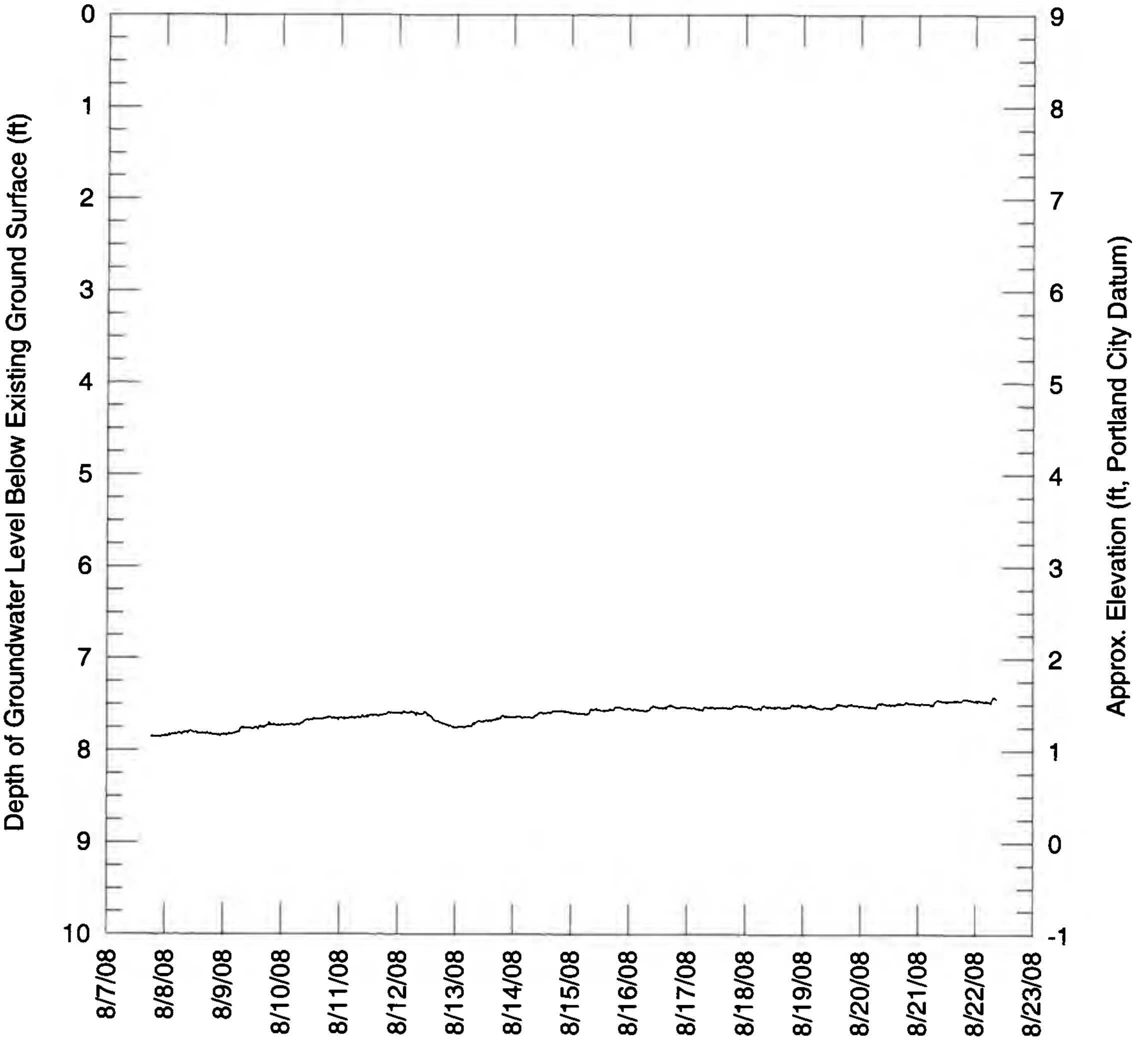
PROJECT Maine Health/United Way Development
LOCATION Portland, Maine
CLIENT Maine Medical Center
CONTRACTOR Maine Test Borings, Inc.
ELEVATION SUBTRAHEND 9.0 (Approximate)

H&A FILE NO. 35611-000
PROJECT MGR. W. Chadbourne
FIELD REP. O. Lawlor
DATE 8/4/2008

Date	Time	Elapsed Time (days)	Depth of Water from Top of Riser Pipe	Elevation of Water	Remarks	Read By
8/4/2008	1200	0	7.3	4.5	GW level prior to well development	OEL
8/4/2008	1240	0	9.5	2.3	GW level after well development	OEL
8/7/2008	1805	3	7.9	3.9	GW level prior to level logger install.	CLH
8/22/2008	1000	18	8.3	3.5	GW level after level logger removal	CLH
10/20/2008	1200	77	10.9	0.9	GW level during TP-203 excavation	BCS
11/17/2008	1131	105	10.8	1.0		ECB
12/1/2008	1353	119	10.7	1.1		BCS

Results of Groundwater Monitoring
Observation Well HA08-5(OW)

MaineHealth/UnitedWay Development
Somerset and Chestnut Streets
Portland, Maine
Haley & Aldrich File No. 35611-000



HALEY& ALDRICH

OBSERVATION WELL INSTALLATION REPORT

Well No. HA08-7(OW)
Boring No. HA08-7(OW)

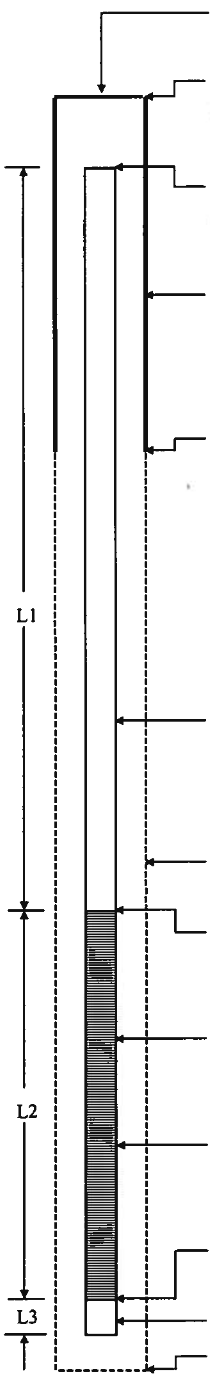
PROJECT Maine Health/United Way Development
LOCATION Portland, Maine
CLIENT Maine Medical Center
CONTRACTOR Maine Test Borings, Inc.
DRILLER M. Porter

H&A FILE NO. 35611-000
PROJECT MGR. W. Chadbourne
FIELD REP. O. Lawlor
DATE INSTALLED 7/31/2008
WATER LEVEL -

Ground El. 12.0 +/- ft
El. Datum Portland City
Location See Plan
☑ **Guard Pipe**
☐ **Roadway Box**

SOIL/ROCK CONDITIONS	**BOREHOLE BACKFILL**
FILL	BENTONITE
	3.0
12.5	
GLACIOMARINE DEPOSIT	FILTER SAND
	15.0
38.0	
GLACIAL TILL	DRILL CUTTINGS
60.1	
BEDROCK	
72.0	72.0

(Bottom of Exploration)
(Numbers refer to depth from ground surface in feet)



Type of protective cover/lock Locked Cover

Height of top of guard pipe box above ground surface 3.0 ft

Height of top of riser pipe above ground surface 2.8 ft

Type of protective casing: Steel Guard Pipe
Length 5.0 ft
Inside Diameter 3.0 in

Depth of bottom of guard pipe/roadway box 2.0 ft

Type of Seals	**Top of Seal (ft)**	**Thickness (ft)**
Concrete	-	-
Bentonite Seal	0.0	3.0

Type of riser pipe: Schedule 40 PVC
Inside diameter of riser pipe 2.0 in
Type of backfill around riser Filter Sand/Bentonite

Diameter of borehole 3.0 in

Depth to top of well screen 5.0 ft

Type of screen Mach. Slotted Sch. 40 PVC
Screen gauge or size of openings 0.010 in
Diameter of screen 2.0 in
Type of backfill around screen Filter Sand

Depth of bottom of well screen 15.0 ft

Bottom of Silt trap 15.0 ft

Depth of bottom of borehole 72.0 ft

(Not to Scale)

7.8 ft + 10 ft + 0 ft = 17.8 ft
Riser Pay Length (L1) + Length of screen (L2) + Length of silt trap (L3) = Pay length

COMMENTS:

Form 2007

HALEY& ALDRICH

GROUNDWATER MONITORING REPORT

OW/PZ NUMBER
HA08-7(OW)
Page 1 **of** 1

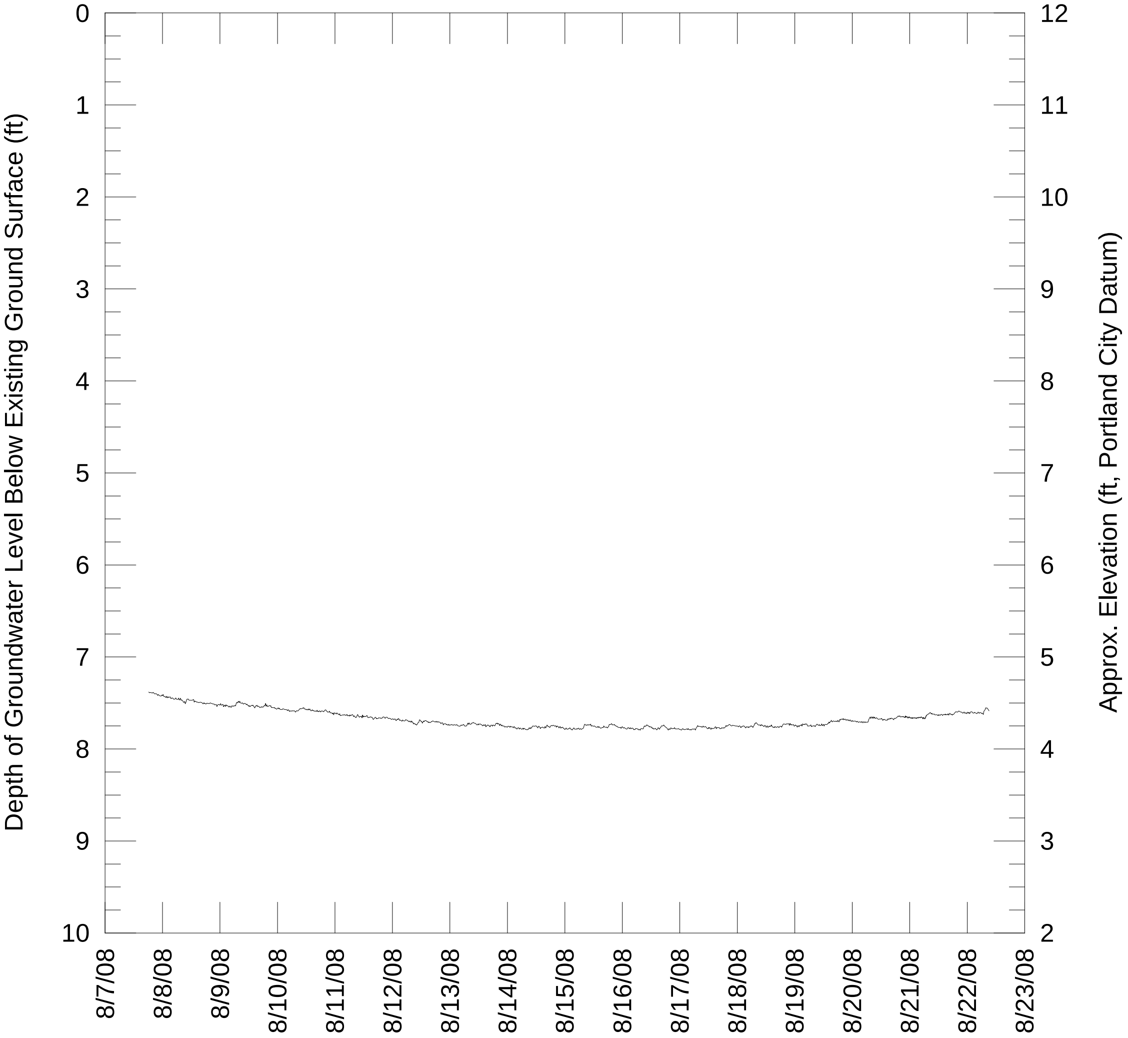
PROJECT	Maine Health/United Way Development	**H&A FILE NO.**	35611-000
LOCATION	Portland, Maine	**PROJECT MGR.**	W. Chadbourne
CLIENT	Maine Medical Center	**FIELD REP.**	O. Lawlor
CONTRACTOR	Maine Test Borings, Inc.	**DATE**	8/4/2008

ELEVATION SUBTRAHEND 12.0 (Approximate)

Date	Time	Elapsed Time (days)	Depth of Water from Top of Riser Pipe	Elevation of Water	Remarks	Read By
8/4/2008	1115	0	10.3	4.5	GW level prior to well development	OEL
8/4/2008	1140	0	12.3	2.5	GW level after well development	OEL
8/7/2008	1800	3	10.2	4.6	GW level prior to level logger install.	CLH
8/22/2008	950	18	10.1	4.7	GW level after level logger removal	CLH
10/20/2008	1200	77	10.2	4.6	GW level during TP-202 excavation	BCS
11/17/2008	1134	105	10.2	4.6		ECB
12/1/2008	1354	119	9.8	5.0		BCS

Results of Groundwater Monitoring
Observation Well HA08-7(OW)

MaineHealth/UnitedWay Development
Somerset and Chestnut Streets
Portland, Maine
Haley & Aldrich File No. 35611-000



HALEY& ALDRICH

OBSERVATION WELL INSTALLATION REPORT

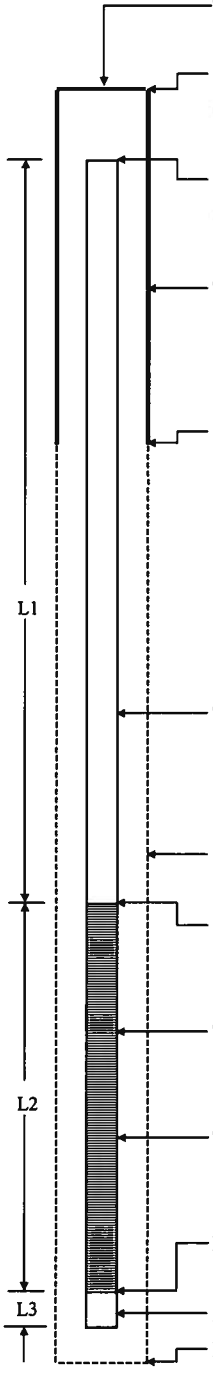
Well No. HA08-12(OW)
Boring No. HA08-12(OW)

PROJECT	Maine Health/United Way Development	**H&A FILE NO.**	35611-000
LOCATION	Portland, Maine	**PROJECT MGR.**	W. Chadbourne
CLIENT	Maine Medical Center	**FIELD REP.**	O. Lawlor
CONTRACTOR	Maine Test Borings, Inc.	**DATE INSTALLED**	7/24/2008
DRILLER	M. Porter	**WATER LEVEL**	-

Ground El. 11.0 +/- ft
El. Datum Portland City
Location See Plan
☑ **Guard Pipe**
☐ **Roadway Box**

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL
	BENTONITE
	3.0
FILL	
11.6	
HARBOR BOTTOM DEPOSIT	FILTER SAND
14.0	
GLACIOMARINE DEPOSIT	
16.0	16.0

(Bottom of Exploration)
(Numbers refer to depth from ground surface in feet)



Type of protective cover/lock Locked Cover

Height of top of guard pipe above ground surface 3.0 ft

Height of top of riser pipe above ground surface 2.75 ft

Type of protective casing: Steel Guard Pipe
Length 5.0 ft
Inside Diameter 3.0 in

Depth of bottom of guard pipe/roadway box 2.0 ft

Type of Seals	Top of Seal (ft)	Thickness (ft)
Concrete	-	-
Bentonite Seal	0.0	3.0

Type of riser pipe: Schedule 40 PVC
Inside diameter of riser pipe 2.0 in
Type of backfill around riser Filter Sand/Bentonite

Diameter of borehole 3.0 in

Depth to top of well screen 4.0 ft

Type of screen Mach. Slotted Sch. 40 PVC
Screen gauge or size of openings 0.010 in
Diameter of screen 2.0 in
Type of backfill around screen Filter Sand

Depth of bottom of well screen 14.0 ft

Bottom of Silt trap 14.0 ft

Depth of bottom of borehole 16.0 ft

(Not to Scale)

6.75 ft	+	10 ft	+	0 ft	=	16.75 ft
Riser Pay Length (L1)		Length of screen (L2)		Length of silt trap (L3)		Pay length

COMMENTS:

Form 2007

HALEY&
ALDRICH

GROUNDWATER MONITORING REPORT

OW/PZ NUMBER
HA08-12(OW)
Page 1 **of** 1

PROJECT Maine Health/United Way Development
LOCATION Portland, Maine
CLIENT Maine Medical Center
CONTRACTOR Maine Test Borings, Inc.
ELEVATION SUBTRAHEND 11.0 (Approximate)

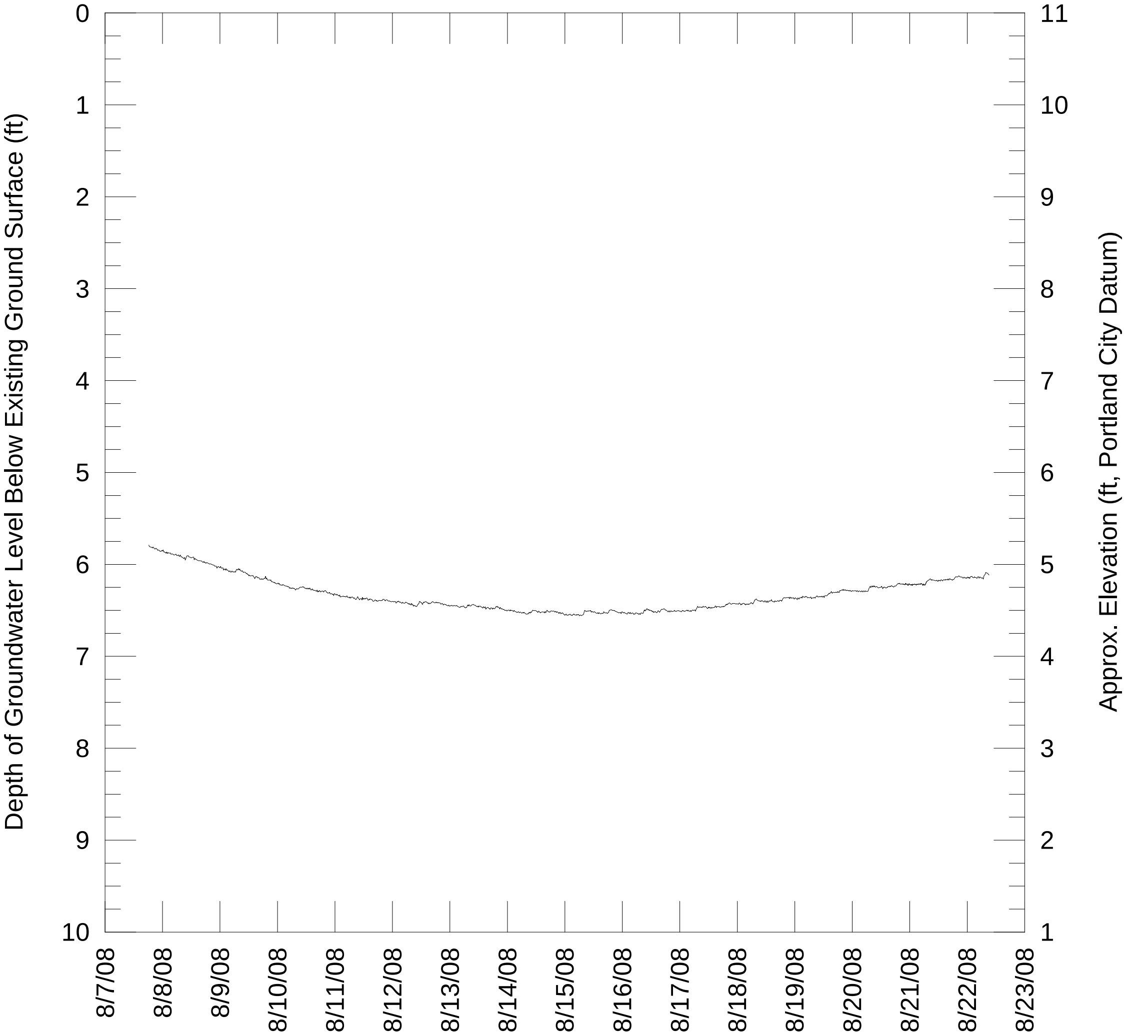
H&A FILE NO. 35611-000
PROJECT MGR. W. Chadbourne
FIELD REP. O. Lawlor
DATE 8/4/2008

Date	Time	Elapsed Time (days)	Depth of Water from Top of Riser Pipe	Elevation of Water	Remarks	Read By
8/4/2008	1030	0	8.9	4.9	GW level prior to well development	OEL
8/4/2008	1100	0	9.0	4.8	GW level after well development	OEL
8/7/2008	1745	3	8.6	5.2	GW level prior to level logger install.	CLH
8/22/2008	945	18	8.4	5.4	GW level after level logger removal	CLH
10/20/2008	1200	77	8.7	5.1	GW level during TP-201 excavation	BCS
11/17/2008	1137	105	8.5	5.3		ECB
12/1/2008	1358	119	8.0	5.8		BCS

G:\PROJECTS\35611\Levelogger Data\OW Installation and GW Monitoring Reports\HA08-12(OW) gwmon.xls

Results of Groundwater Monitoring
Observation Well HA08-12(OW)

MaineHealth/UnitedWay Development
Somerset and Chestnut Streets
Portland, Maine
Haley & Aldrich File No. 35611-000



APPENDIX C

2008 Soil Screening Headspace Reports for Proposed MaineHealth/United Way Development (see Reference 4)

HALEY & ALDRICH

HEADSPACE SCREENING REPORT

PROJECT	MaineHealth / UnitedWay Development	**H&A FILE NO.**	35611-000
LOCATION	Portland, Maine	**PROJECT MGR.**	W. Chadbourne
CLIENT	Maine Medical Center	**FIELD REP**	O. Lawlor
INSTRUMENT	Thermo 580B	**DATE SAMPLED**	7/23/2008 - 7/24/2008

DATE CALIBRATED (1)	7/28/2008	**LAMP (eV)**	10.6	**DATE SCREENED**	7/28/2008
AMBIENT TEMPERATURE	RT	**CALIBRATED BY**	DAD	**SCREENING LOC.**	H&A Portland Lab

Exploration	Sample Number	Depth (ft)	Sample Description	Sample Reading (ppm)(2)	Back-Ground Reading (ppm)(2)	Remarks	GC(3)	Containers			
								Drill Jar			
HA08-3	S1	1.0-3.0	well graded gravel with sand	0.9	0.0			X			
HA08-3	S2	3.0-5.0	silty sand with ash & cinders	1.2	0.0			X			
HA08-3	S3	5.0-7.0	cinders, ash, brick, and coal	2.8	0.0			X			
HA08-3	S4	7.0-9.0	poorly-graded gravel, cinders	1.5	0.0			X			
HA08-3	S5	10.0-12.0	silty sand, cinders and ash	14.9	0.0			X			
HA08-3	S6	12.0-14.0	silt with sand, shells, organics	0.0	0.0			X			
HA08-3	S7	14.0-16.0	silt with sand, shells, H2S odor	0.0	0.0			X			
HA08-6	S1	0.0-2.0	silty sand	0.0	0.0			X			
HA08-6	S2	2.0-4.0	silty sand, brick, cinders, wood	0.0	0.0	Tinfoil cover torn		X			
HA08-6	S3	4.0-6.0	silty to well graded sand	0.0	0.0			X			
HA08-6	S4	6.0-8.0	poorly graded sand	0.0	0.0			X			
HA08-6	S5	8.0-10.0	silty sand with gravel	0.0	0.0			X			
HA08-6	S6	10.0-12.0	silty sand w/ gravel, brick, shell	0.0	0.0			X			
HA08-6	S7	12.0-14.0	sandy silt, shell fragments	0.0	0.0			X			
HA08-9	S1	0.0-2.0	silty gravel with sand, org odor	0.0	0.0			X			
HA08-9	S2	2.0-4.0	cinders and ash to silty sand	0.0	0.0			X			
HA08-9	S3	4.0-6.0	silty sand	0.0	0.0			X			
HA08-9	S4	6.0-8.0	silty sand with gravel	0.0	0.0			X			
HA08-9	S5	8.0-10.0	silty sand with gravel	0.0	0.0			X			
HA08-9	S6	10.0-12.0	silty sand, wood and glass	0.0	0.0			X			
HA08-9	S7	12.0-14.0	silt, wood fragments, org odor	0.0	0.0	Poor sample recovery		X			
HA08-9	S8	14.0-16.0	lean clay	0.0	0.0			X			
HA08-12	S1	0.0-2.0	silty sand with gravel, cinders	0.0	0.0			X			
HA08-12	S2	2.0-4.0	silty sand with gravel, cinders	0.0	0.0			X			
HA08-12	S3	4.0-6.0	silty sand - poorly graded sand	0.0	0.0			X			

1. Instrument calibrated to the manufacturer standard.
2. ppm represents concentration of detectable volatile gaseous compounds in parts per million of air.
3. Sample assigned for gas chromatograph screening.

Sampled and relinquished by:	Received by:	Relinquished by:	Received by:
Sign: NA	**Sign:** NA	**Sign:** NA	**Sign:** NA
Print: NA	**Print:** NA	**Print:** NA	**Print:** NA
Firm: NA	**Firm:** NA	**Firm:** NA	**Firm:** NA
Date: NA **Time:** NA	**Date:** NA **Time:** NA	**Date:** NA **Time:** NA	**Date:** NA **Time:** NA

HALEY & ALDRICH

HEADSPACE SCREENING REPORT

Page 2 **of** 5

PROJECT MaineHealth / UnitedWay Development

LOCATION Portland, Maine

CLIENT Maine Medical Center

INSTRUMENT Thermo 580B

DATE CALIBRATED (1) 7/28/2008 **LAMP (eV)** 10.6

AMBIENT TEMPERATURE RT **CALIBRATED BY** DAD

H&A FILE NO. 35611-000

PROJECT MGR. W. Chadbourne

FIELD REP O. Lawlor

DATE SAMPLED 7/23/2008 - 7/24/2008

DATE SCREENED 7/28/2008

SCREENING LOC. H&A Portland Lab

Exploration	Sample Number	Depth (ft)	Sample Description	Sample Reading (ppm)(2)	Back-Ground Reading (ppm)(2)	Remarks	GC(3)	Containers			
								Drill Jar			
HA08-12	S4	6.0-8.0	poorly graded sand	0.0	0.0			X			
HA08-12	S5	8.0-10.0	well graded sand	0.0	0.0			X			
HA08-12	S6	10.0-12.0	well graded sand	0.0	0.0			X			
HA08-12	S7	12.0-14.0	no recovery, shells in wash	0.0	0.0			X			

1. Instrument calibrated to the manufacturer standard.
2. ppm represents concentration of detectable volatile gaseous compounds in parts per million of air.
3. Sample assigned for gas chromatograph screening.

Sampled and relinquished by:	Received by:	Relinquished by:	Received by:
Sign: NA	**Sign:** NA	**Sign:** NA	**Sign:** NA
Print: NA	**Print:** NA	**Print:** NA	**Print:** NA
Firm: NA	**Firm:** NA	**Firm:** NA	**Firm:** NA
Date: NA **Time:** NA	**Date:** NA **Time:** NA	**Date:** NA **Time:** NA	**Date:** NA **Time:** NA

HALEY & ALDRICH

HEADSPACE SCREENING REPORT

PROJECT	MaineHealth / UnitedWay Development	**H&A FILE NO.**	35611-000
LOCATION	Portland, Maine	**PROJECT MGR.**	W. Chadbourne
CLIENT	Maine Medical Center	**FIELD REP**	O. Lawlor
INSTRUMENT	Thermo 580B	**DATE SAMPLED**	7/28/2008 - 7/29/2008

DATE CALIBRATED (1)	7/30/2008	**LAMP (eV)**	10.6	**DATE SCREENED**	7/30/2008
AMBIENT TEMPERATURE	RT	**CALIBRATED BY**	DAD	**SCREENING LOC.**	H&A Portland Lab

Exploration	**Sample Number**	**Depth (ft)**	**Sample Description**	**Sample Reading (ppm)(2)**	**Back-Ground Reading (ppm)(2)**	**Remarks**	**GC(3)**	**Containers**			
								Drill Jar			
HA08-11	S1	0.0-2.0	sand w/ brick, cinders & plastic	0.0	0.0			X			
HA08-11	S2	2.0-4.0	sand w/ brick, cinders & plastic	5.0	0.0			X			
HA08-11	S3	4.0-6.0	poorly graded sand	12.3	0.0			X			
HA08-11	S4	6.0-8.0	well graded sand	0.0	0.0			X			
HA08-11	S5	8.0-10.0	well graded sand	0.0	0.0			X			
HA08-11	S6	10.0-12.0	well graded sand	0.0	0.0			X			
HA08-13	S1	0.0-2.0	poorly graded sand, cinders	0.0	0.0			X			
HA08-13	S2	2.0-4.0	poorly graded sand,cinder&ash	0.0	0.0			X			
HA08-13	S3	4.0-6.0	poorly graded sand,cinder&ash	0.0	0.0			X			
HA08-13	S4	6.0-8.0	well graded gravel, wood&glass	0.0	0.0			X			
HA08-13	S5	8.0-10.0	gravel, wood and glass	0.0	0.0			X			
HA08-13	S6	10.0-12.0	sandy silt, wood, glass & shells	0.0	0.0			X			

1. Instrument calibrated to the manufacturer standard.
2. ppm represents concentration of detectable volatile gaseous compounds in parts per million of air.
3. Sample assigned for gas chromatograph screening.

Sampled and relinquished by:	**Received by:**	**Relinquished by:**	**Received by:**
Sign: NA	**Sign:** NA	**Sign:** NA	**Sign:** NA
Print: NA	**Print:** NA	**Print:** NA	**Print:** NA
Firm: NA	**Firm:** NA	**Firm:** NA	**Firm:** NA
Date: NA **Time:** NA	**Date:** NA **Time:** NA	**Date:** NA **Time:** NA	**Date:** NA **Time:** NA

HEADSPACE SCREENING REPORT

PROJECT MaineHealth / UnitedWay Development
H&A FILE NO. 35611-000
LOCATION Portland, Maine
PROJECT MGR. W. Chadbourne
CLIENT Maine Medical Center
FIELD REP O. Lawlor
INSTRUMENT Thermo 580B
DATE SAMPLED 7/30/2008 - 8/4/2008
DATE CALIBRATED (1) 7/30/2008
LAMP (eV) 10.6
DATE SCREENED 8/6/2008
AMBIENT TEMPERATURE RT
CALIBRATED BY DAD
SCREENING LOC. H&A Portland Lab

Exploration	Sample Number	Depth (ft)	Sample Description	Sample Reading (ppm)(2)	Back-Ground Reading (ppm)(2)	Remarks	GC(3)	Containers			
								Drill Jar			
HA08-4	S1	0.5-2.5	sand with silt, cinder and ash	69.0	0.0			X			
HA08-4	S2	2.5-4.5	sand with silt, cinder and ash	55.0	0.0			X			
HA08-4	S3	5.0-7.0	silty sand, cinder and ash	0.0	0.0			X			
HA08-4	S4	7.0-9.0	poorly graded sand with wood	40.0	0.0			X			
HA08-4	S5	9.0-11.0	sand w/ silt, wood, glass, shells	0.0	0.0			X			
HA08-5	S1	0.0-2.0	poorly graded sand, cinder, ash	123.0	0.0			X			
HA08-5	S2	2.0-4.0	poorly graded sand, cinder, ash	114.0	0.0			X			
HA08-5	S3	4.0-6.0	poorly graded sand, cinder, ash	6.0	0.0			X			
HA08-5	S4	6.0-8.0	poorly graded sand, cinder, ash	4.2	0.0			X			
HA08-5	S5	8.0-10.0	silty sand, shell and brick	2.5	0.0			X			
HA08-7	S1	0.0-2.0	sand with silt, ash, brick, wood	9.4	0.0			X			
HA08-7	S2	2.0-4.0	sand with silt, ash, brick	4.2	0.0			X			
HA08-7	S3	4.0-6.0	silty sand, cinder and ash	0.8	0.0			X			
HA08-7	S4	6.0-8.0	silty sand, cinder and ash	0.8	0.0			X			
HA08-7	S5	8.0-10.0	well graded sand	0.0	0.0			X			
HA08-7	S6	10.0-12.0	silty sand, trace clay	0.0	0.0			X			

1. Instrument calibrated to the manufacturer standard.
2. ppm represents concentration of detectable volatile gaseous compounds in parts per million of air.
3. Sample assigned for gas chromatograph screening.

Sampled and relinquished by:	Received by:	Relinquished by:	Received by:
Sign: NA	**Sign:** NA	**Sign:** NA	**Sign:** NA
Print: NA	**Print:** NA	**Print:** NA	**Print:** NA
Firm: NA	**Firm:** NA	**Firm:** NA	**Firm:** NA
Date: NA **Time:** NA	**Date:** NA **Time:** NA	**Date:** NA **Time:** NA	**Date:** NA **Time:** NA

HALEY & ALDRICH

HEADSPACE SCREENING REPORT

PROJECT MaineHealth / UnitedWay Development
H&A FILE NO. 35611-000
LOCATION Portland, Maine
PROJECT MGR. W. Chadbourne
CLIENT Maine Medical Center
FIELD REP O. Lawlor
INSTRUMENT Thermo 580B
DATE SAMPLED 8/6/2008 - 8/13/2008
DATE CALIBRATED (1)
LAMP (eV) 10.6
DATE SCREENED 8/13/2008
AMBIENT TEMPERATURE RT
CALIBRATED BY DAD
SCREENING LOC. H&A Portland Lab

Exploration	Sample Number	Depth (ft)	Sample Description	Sample Reading (ppm)(2)	Back-Ground Reading (ppm)(2)	Remarks	GC(3)	Containers			
								Drill Jar			
HA08-8	S1	0.0-2.0	poorly graded sand with gravel	0.0	0.0			X			
HA08-8	S2	2.0-4.0	silty sand with gravel	0.0	0.0			X			
HA08-8	S3	5.0-7.0	silty sand with gravel	5.9	0.0			X			
HA08-8	S4	7.0-9.0	silty sand with gravel	14.5	0.0			X			
HA08-1	S1	1.0-3.0	well graded gravel, concrete	0.0	0.0			X			
HA08-1	S2	3.0-5.0	silty sand, concrete, ash	0.0	0.0			X			
HA08-1	S3	5.0-7.0	silty sand	0.0	0.0	Tinfoil cover torn		X			
HA08-1	S4	7.0-9.0	silty sand	0.0	0.0			X			
HA08-1	S5	10.0-12.0	sandy organic soil, with shells	0.0	0.0			X			
HA08-1	S6	12.0-14.0	sandy organic soil, with shells	0.0	0.0	Tinfoil cover torn		X			
HA08-10	S1	0.0-2.0	sandy silt, brick	0.0	0.0			X			
HA08-10	S2	2.0-4.0	silty sand	0.0	0.0			X			
HA08-10	S3	4.0-6.0	silty sand	0.0	0.0			X			
HA08-10	S4	6.0-8.0	silty sand, wood w/ creosote	0.0	0.0			X			
HA08-10	S5	8.0-10.0	sandy organic silt, brick, metal	0.0	0.0			X			
HA08-2	S1	0.0-2.0	silty sand, wood and ash	0.0	0.0			X			
HA08-2	S2	4.0-6.0	poorly graded sand	0.0	0.0			X			
HA08-2	S3	6.0-8.0	poorly graded sand	0.0	0.0			X			
HA08-2	S4	8.0-10.0	silty gravel, shells and wood	0.0	0.0			X			
HA08-2	S5	10.0-12.0	poorly graded gravel	0.0	0.0			X			

1. Instrument calibrated to the manufacturer standard.
2. ppm represents concentration of detectable volatile gaseous compounds in parts per million of air.
3. Sample assigned for gas chromatograph screening.

Sampled and relinquished by:	Received by:	Relinquished by:	Received by:
Sign: NA	**Sign:** NA	**Sign:** NA	**Sign:** NA
Print: NA	**Print:** NA	**Print:** NA	**Print:** NA
Firm: NA	**Firm:** NA	**Firm:** NA	**Firm:** NA
Date: NA **Time:** NA	**Date:** NA **Time:** NA	**Date:** NA **Time:** NA	**Date:** NA **Time:** NA

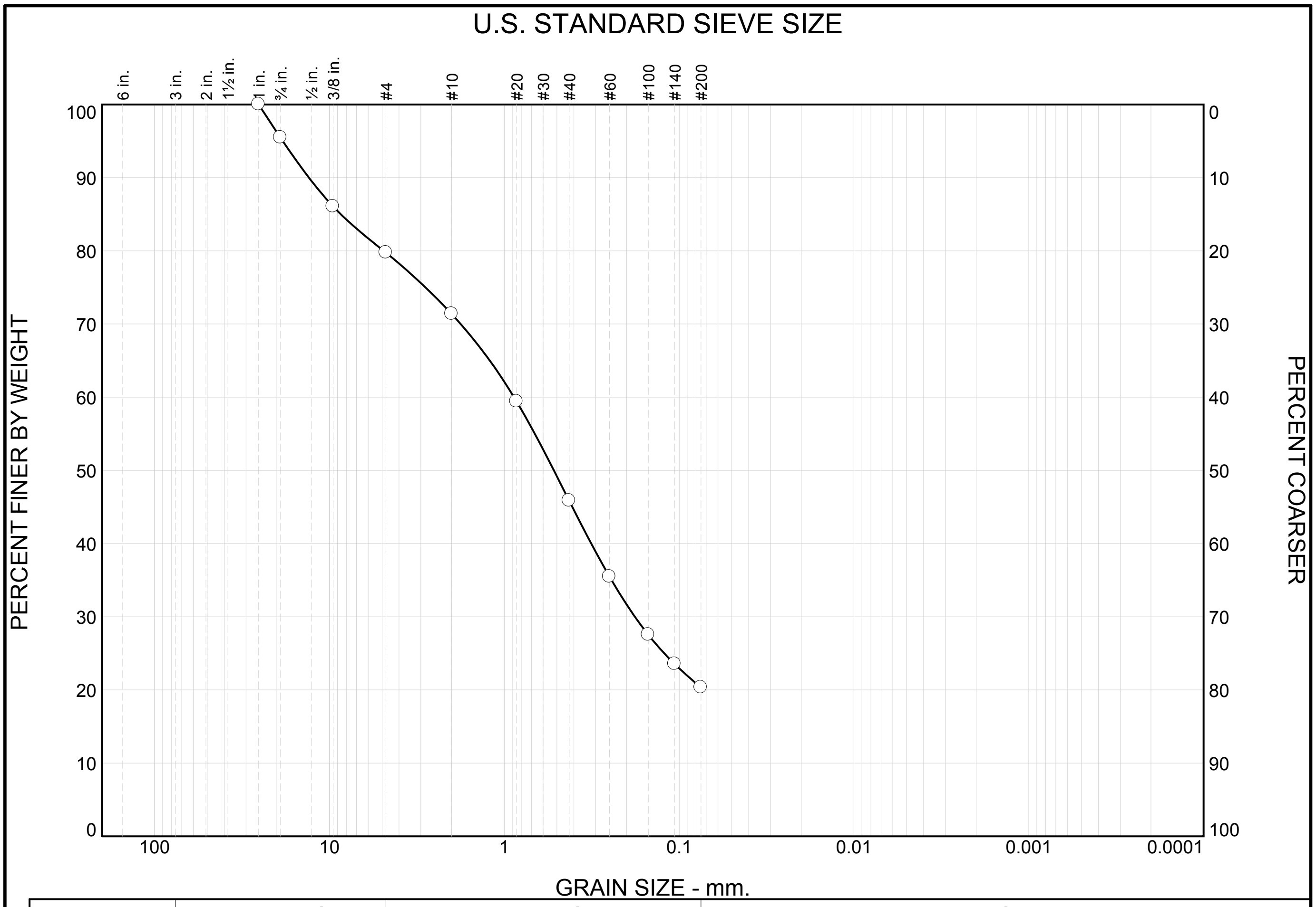
Form 1010

APPENDIX D

2008 Laboratory Test Results for Proposed MaineHealth/United Way Development

(see Reference 4)

Grain Size Distribution Reports



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	4.5	15.8	8.3	25.6	25.5	20.3	

	Expl. No.	Sample No.	Depth (ft)	Atterberg Limits % W_L	W_P	I_P	Water Content (%)	C_u	C_c	USCS
○	HA08-4	C01	0.5-4.5				9.9			SM

	Sample Description
○	Dark brown silty sand with gravel

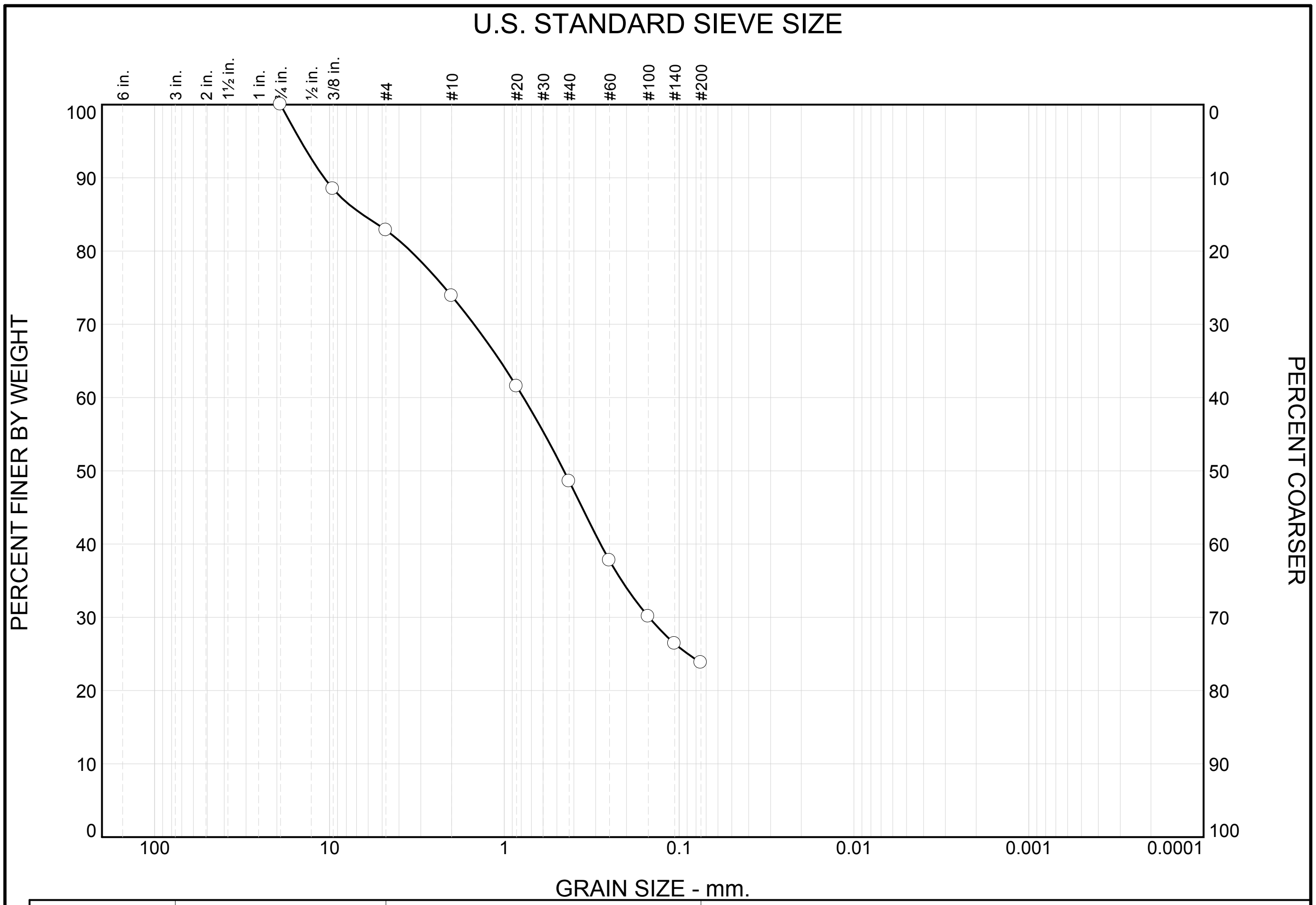
Remarks:
○Composite Sample: S01 & S02

HALEY& ALDRICH

Maine Health/United Way Development
Portland, Maine

GRAIN SIZE DISTRIBUTION

DATE: 8/29/2008 FILE NO: 35611-000



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	17.2	8.9	25.3	24.8	23.8	

	Expl. No.	Sample No.	Depth (ft)	Atterberg Limits %			Water Content (%)	C_u	C_c	USCS
				W_L	W_P	I_P				
○	HA08-6	S02	2.0-4.0				16.8			SM

Sample Description

○ Dark brown silty sand with gravel

Remarks:

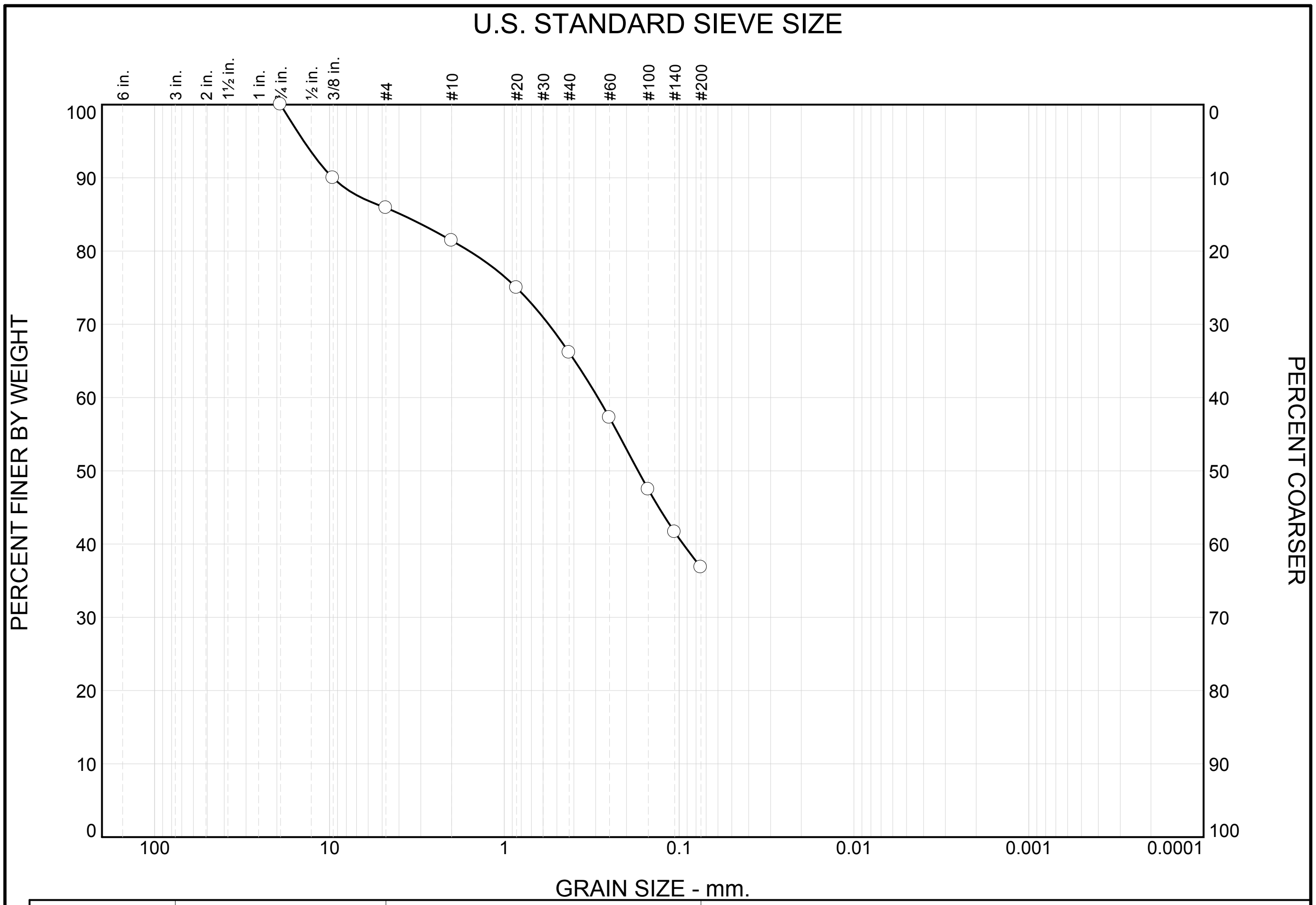
Maine Health/United Way Development
Portland, Maine

HALEY& ALDRICH

GRAIN SIZE DISTRIBUTION

DATE: 8/29/2008

FILE NO: 35611-000



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	14.1	4.5	15.3	29.3	36.8	

	Expl. No.	Sample No.	Depth (ft)	Atterberg Limits %			Water Content (%)	C_u	C_c	USCS
				W_L	W_P	I_P				
○	HA08-10	C01	0.0-4.0				9.1			SM

	Sample Description
○	Brown silty sand

Remarks:

○Composite Sample: S01 & S02

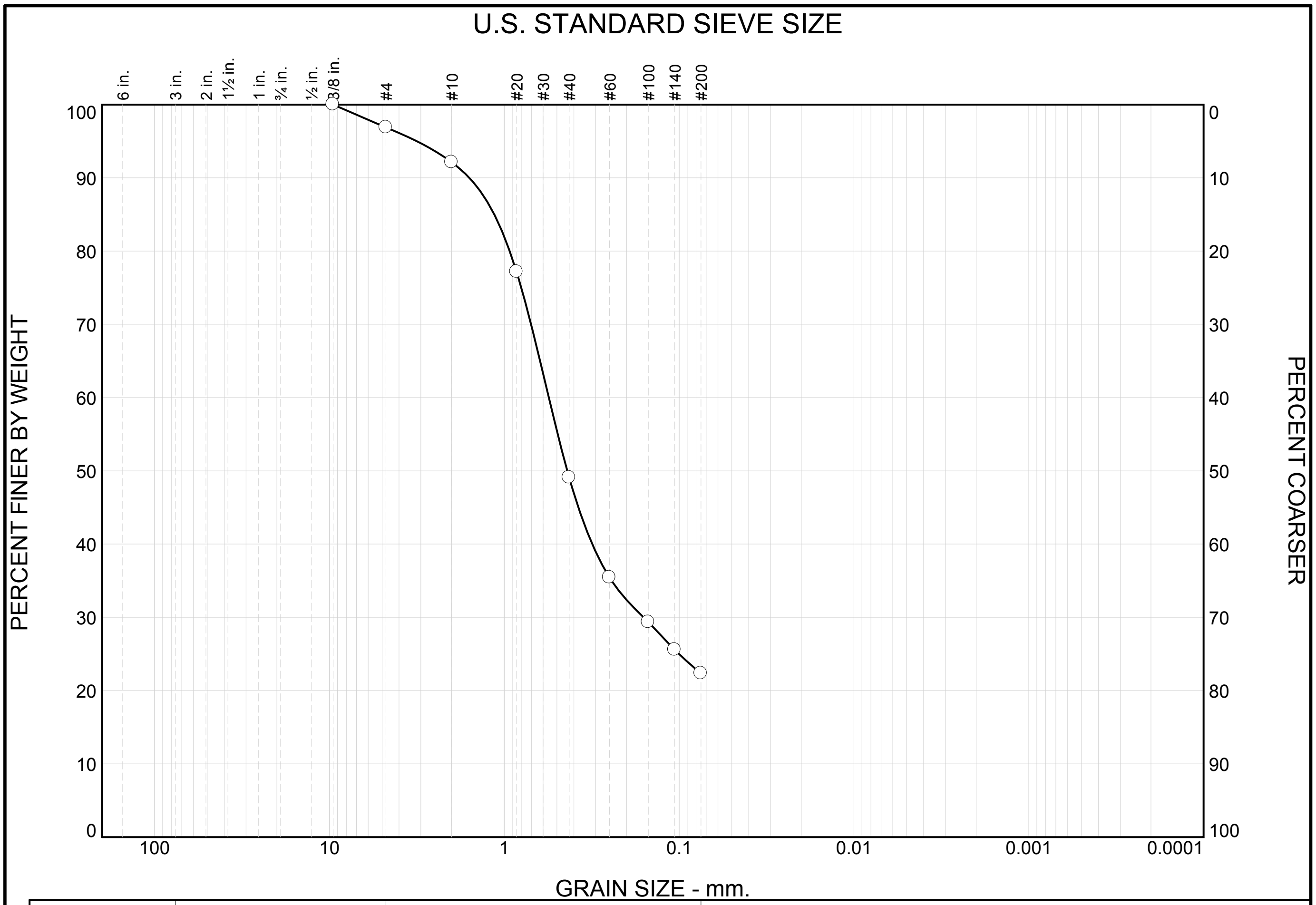
HALEY& ALDRICH

Maine Health/United Way Development
Portland, Maine

GRAIN SIZE DISTRIBUTION

DATE: 8/29/2008

FILE NO: 35611-000



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	3.1	4.8	43.0	26.8	22.3	

	Expl. No.	Sample No.	Depth (ft)	Atterberg Limits %			Water Content (%)	C_u	C_c	USCS
				w_L	w_P	I_P				
○	HA08-12	S03	4.0-6.0				9.7			SM

	Sample Description
○	Brown silty sand

Remarks:

HALEY&
ALDRICH

Maine Health/United Way Development
Portland, Maine

GRAIN SIZE DISTRIBUTION

DATE: 8/29/2008

FILE NO: 35611-000

Atterberg Limits and Natural Water Content Reports

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Haley & Aldrich, Inc.				
Project:	Maine Health / United Way Development				
Location:	Portland, ME			Project No:	GTX-8427
Boring ID:	---	Sample Type:	---	Tested By:	ap
Sample ID:	---	Test Date:	08/15/08	Checked By:	jdt
Depth :	---	Sample Id:	---		

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
HA08-4	S-12	30-32 ft	Moist, olive gray clay	38.3
HA08-4	S-13	40-42 ft	Moist, olive gray clay	41.8
HA08-8	S-10	30-32 ft	Moist, olive gray clay	42.7
HA08-8	S-11	35-37 ft	Moist, olive gray clay	30.8

Notes: Temperature of Drying : 110° Celsius

printed 8/15/2008 11:54:29 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Haley & Aldrich, Inc.				
Project:	Maine Health / United Way Development				
Location:	Portland, ME			Project No:	GTX-8427
Boring ID:	---	Sample Type:	---	Tested By:	ap
Sample ID:	---	Test Date:	09/03/08	Checked By:	jdt
Depth :	---	Sample Id:	---		

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
HA08-4	U-2	33-35 ft	Moist, dark greenish gray clay	31.4
HA08-10	U-1	25-27 ft	Moist, gray clay	37.9

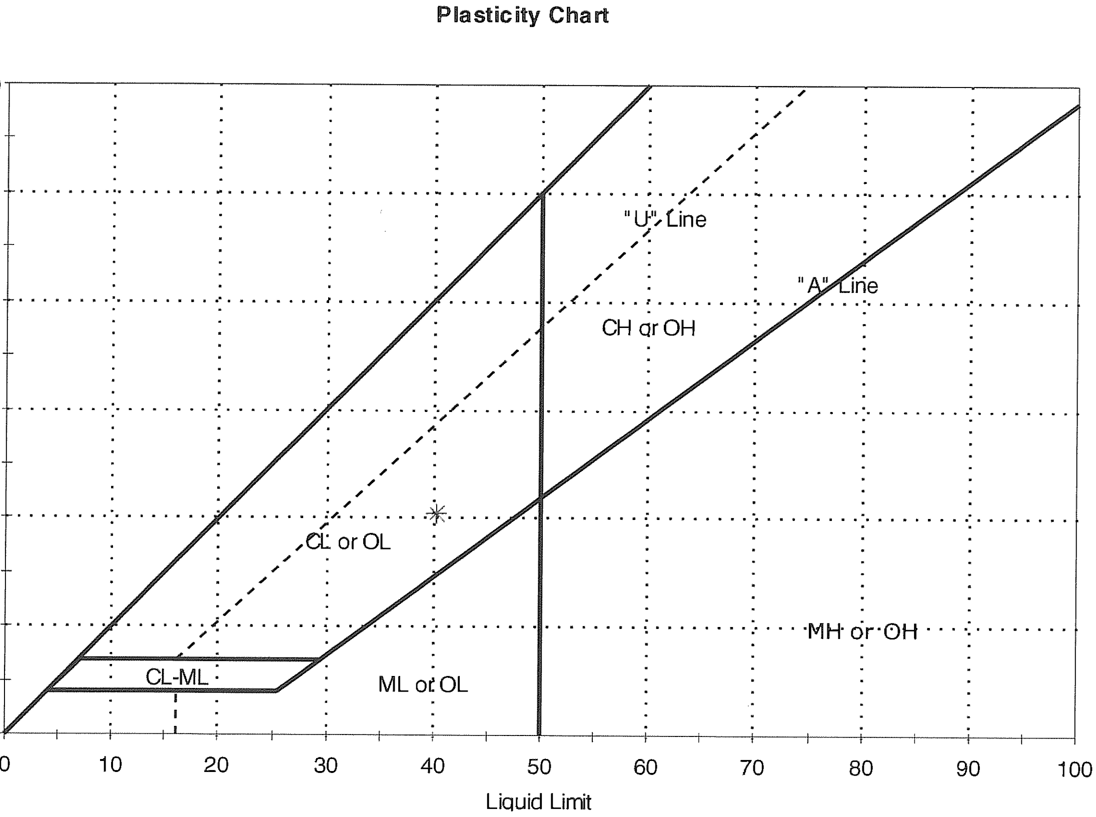
Notes: Temperature of Drying : 110° Celsius

printed 9/3/2008 12:03:56 PM

Client:	Haley & Aldrich, Inc.		
Project:	Maine Health / United Way Development		
Location:	Portland, ME	Project No:	GTX-8427
Boring ID: HA08-4	Sample Type: jar	Tested By:	ap
Sample ID:S-12	Test Date: 08/12/08	Checked By:	jdt
Depth : 30-32 ft	Test Id: 136560		

Test Comment: ---
Sample Description: Moist, olive gray clay
Sample Comment: ---

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
✳	S-12	HA08-4	30-32 ft	38	40	20	20	1	

Sample Prepared using the WET method

Dry Strength: VERY HIGH
Dilentancy: SLOW
Toughness: LOW

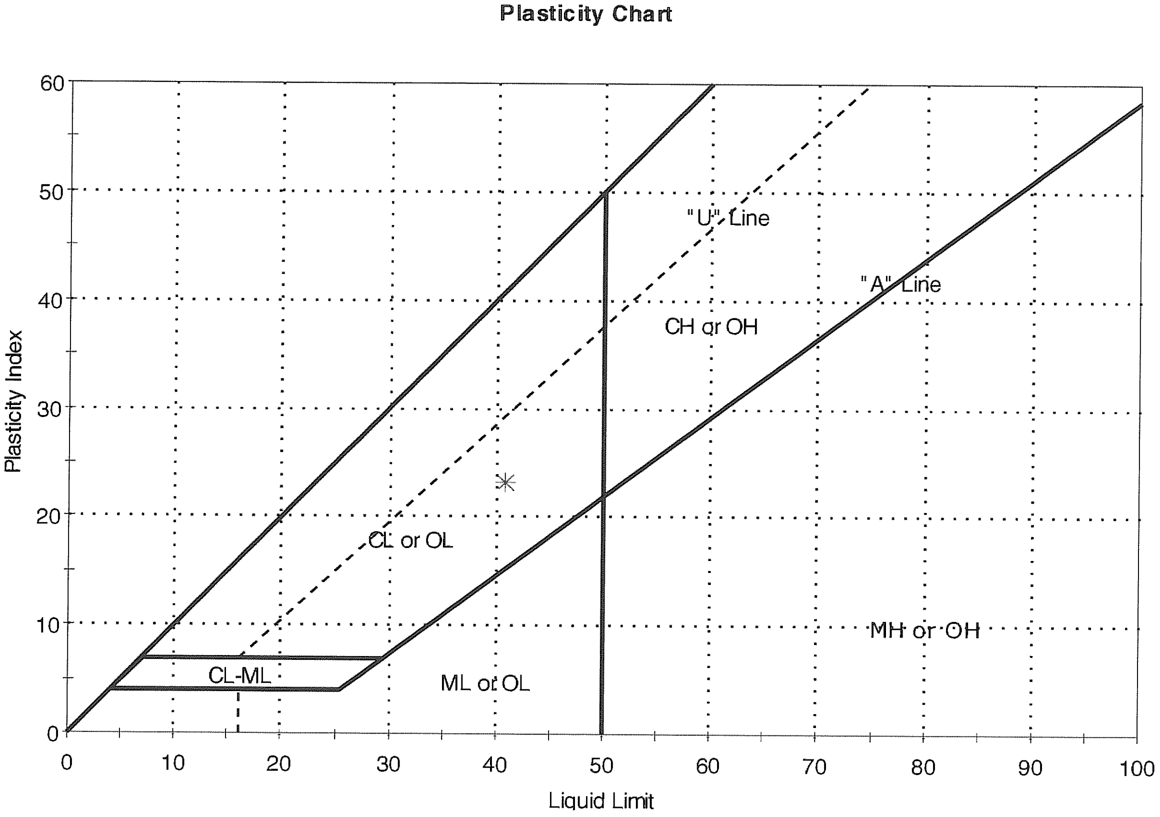
GeoTesting express
a subsidiary of Geocomp Corporation

Client: Haley & Aldrich, Inc.
Project: Maine Health / United Way Development
Location: Portland, ME
Project No: GTX-8427

Boring ID: HA08-4
Sample ID: U-2
Depth : 33-35 ft
Sample Type: tube
Test Date: 08/26/08
Test Id: 136851
Tested By: ap
Checked By: jdt

Test Comment: ---
Sample Description: Moist, dark greenish gray clay
Sample Comment: ---

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
✳	U-2	HA08-4	33-35 ft	31	41	17	24	1	

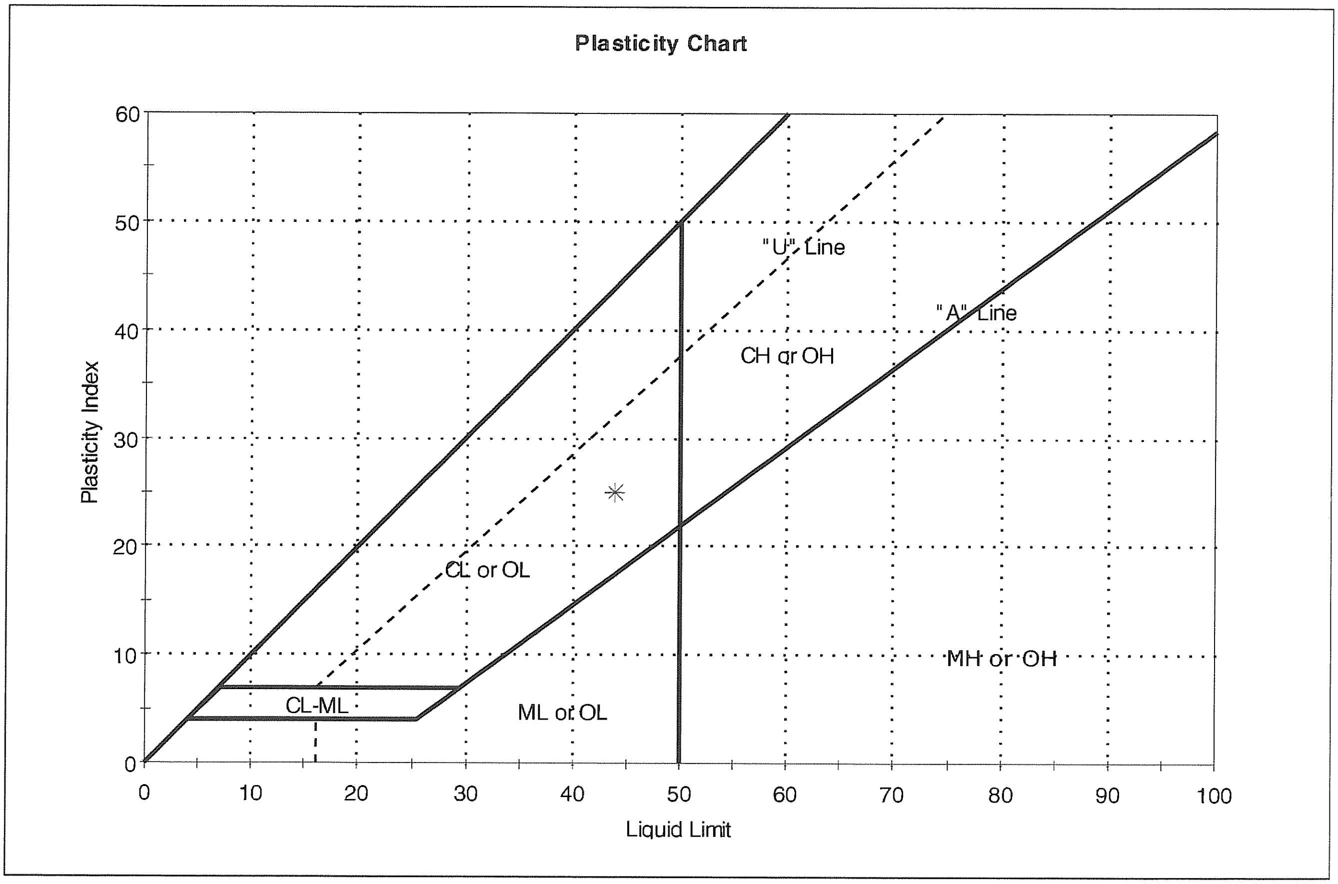
Sample Prepared using the WET method

Dry Strength: VERY HIGH
Dilentancy: SLOW
Toughness: LOW

printed 9/3/2008 12:04:16 PM

Client: Haley & Aldrich, Inc.
Project: Maine Health / United Way Development
Location: Portland, ME
Project No: GTX-8427
Boring ID: HA08-4
Sample Type: jar
Tested By: ap
Sample ID:S-13
Test Date: 08/13/08
Checked By: jdt
Depth : 40-42 ft
Test Id: 136561
Test Comment: ---
Sample Description: Moist, olive gray clay
Sample Comment: ---

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
✳	S-13	HA08-4	40-42 ft	42	44	19	25	1	

Sample Prepared using the WET method

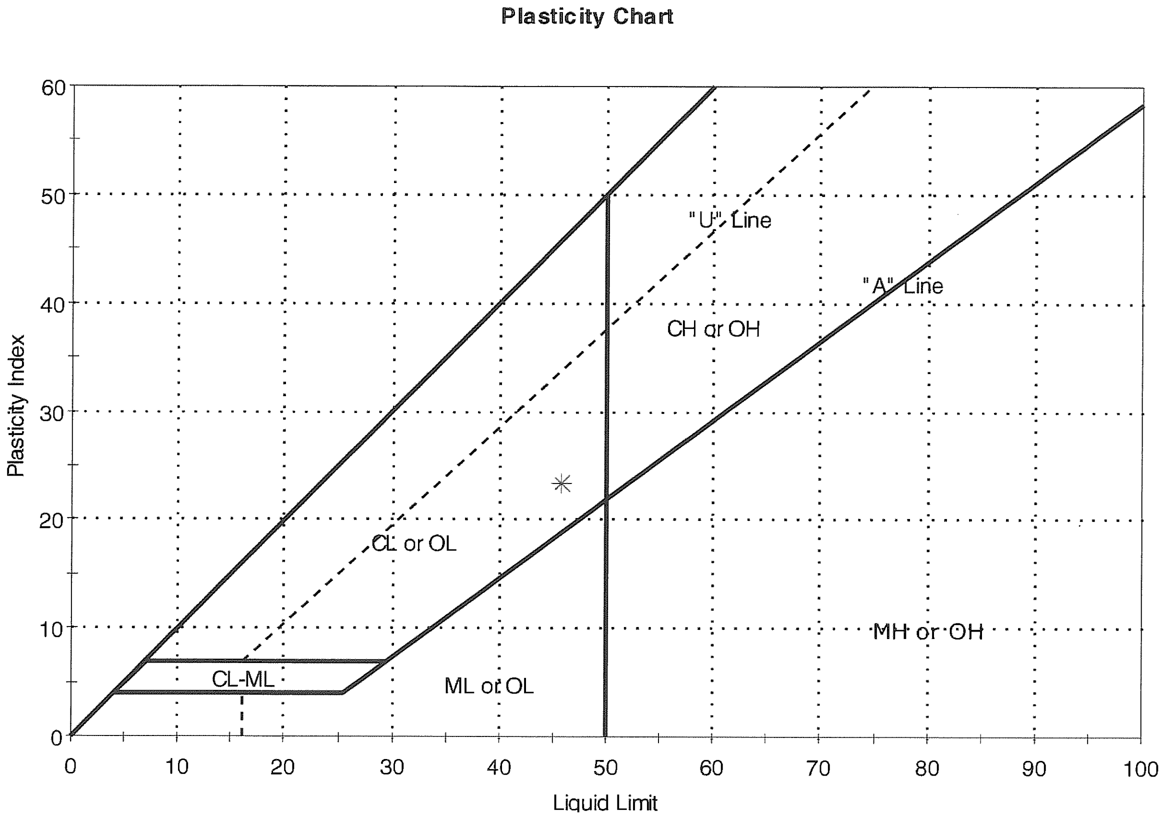
Dry Strength: VERY HIGH
Dilentancy: SLOW
Toughness: LOW

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Haley & Aldrich, Inc.		
Project:	Maine Health / United Way Development		
Location:	Portland, ME	Project No:	GTX-8427
Boring ID: HA08-8	Sample Type: jar	Tested By:	ap
Sample ID:S-10	Test Date: 08/12/08	Checked By:	jdt
Depth : 30-32 ft	Test Id: 136562		

Test Comment: ---
Sample Description: Moist, olive gray clay
Sample Comment: ---

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
✳	S-10	HA08-8	30-32 ft	43	46	23	23	1	

Sample Prepared using the WET method

Dry Strength: VERY HIGH
Dilentancy: SLOW
Toughness: LOW

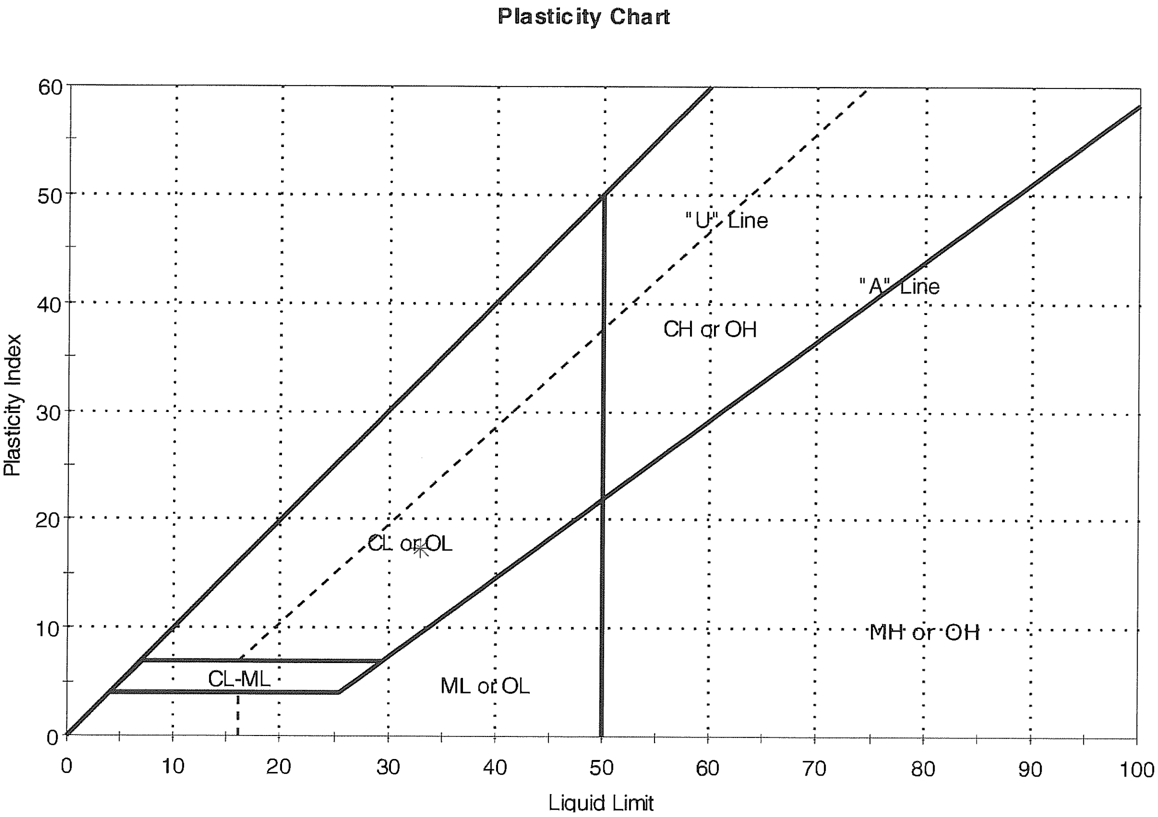
printed 8/15/2008 11:54:51 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Haley & Aldrich, Inc.				
Project:	Maine Health / United Way Development				
Location:	Portland, ME			Project No:	GTX-8427
Boring ID:	HA08-8	Sample Type:	jar	Tested By:	ap
Sample ID:	S-11	Test Date:	08/13/08	Checked By:	jdt
Depth :	35-37 ft	Test Id:	136563		

Test Comment: ---
Sample Description: Moist, olive gray clay
Sample Comment: ---

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
✳	S-11	HA08-8	35-37 ft	31	33	16	17	1	

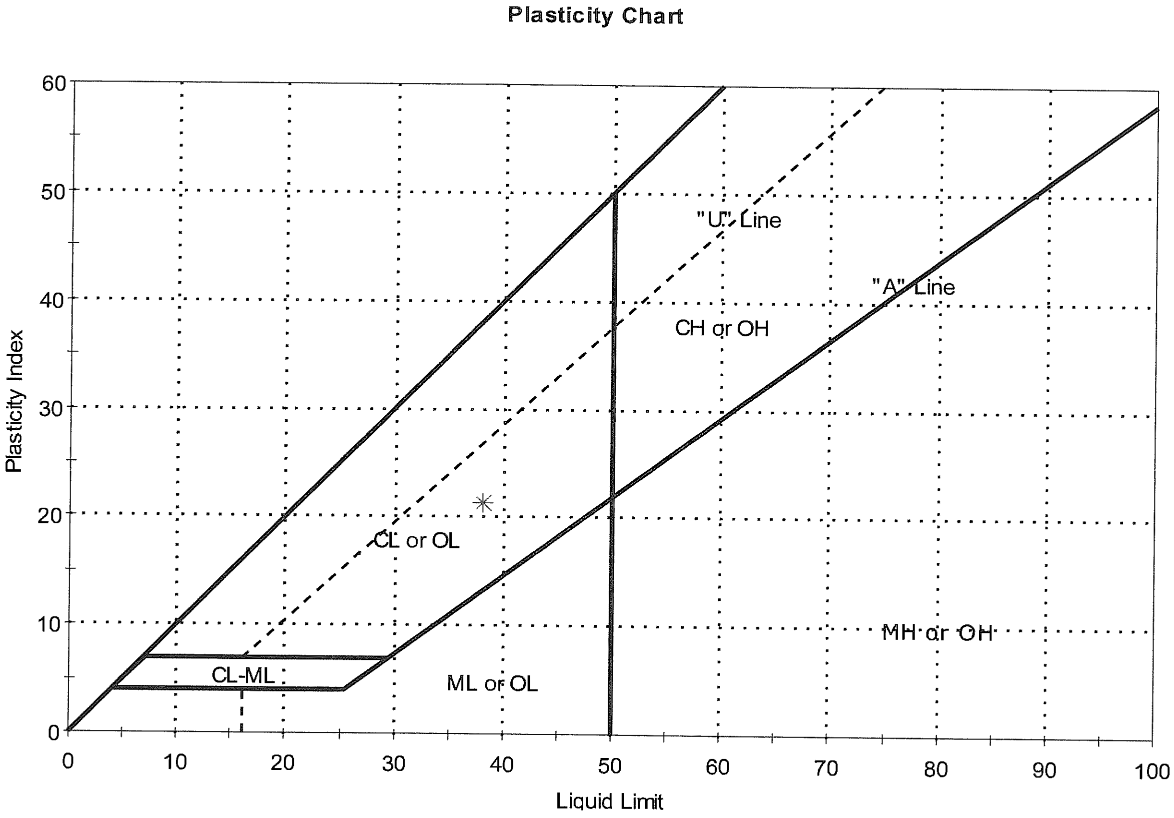
Sample Prepared using the WET method

Dry Strength: VERY HIGH
Dilentancy: SLOW
Toughness: LOW

printed 8/15/2008 11:54:57 AM

Client:	Haley & Aldrich, Inc.				
Project:	Maine Health / United Way Development				
Location:	Portland, ME			Project No:	GTX-8427
Boring ID:	HA08-10	Sample Type:	tube	Tested By:	ap
Sample ID:	U-1	Test Date:	08/26/08	Checked By:	jdt
Depth :	25-27 ft	Test Id:	136852		
Test Comment:	---				
Sample Description:	Moist, gray clay				
Sample Comment:	---				

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
✳	U-1	HA08-10	25-27 ft	38	38	17	21	1	

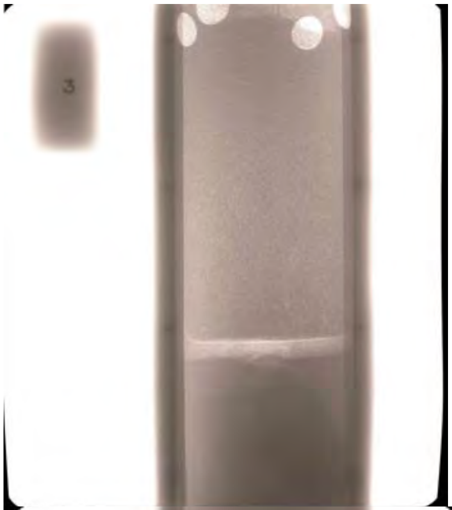
Sample Prepared using the WET method

Dry Strength: VERY HIGH
Dilentancy: SLOW
Toughness: LOW

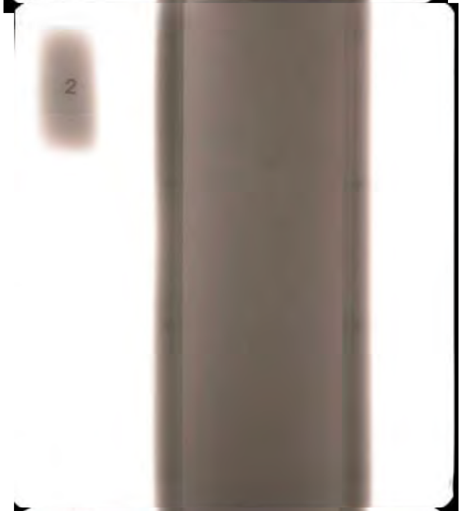
Shelby Tube X-Ray Reports and Consolidation Test Results

GeoTesting express
a subsidiary of Geocomp Corporation

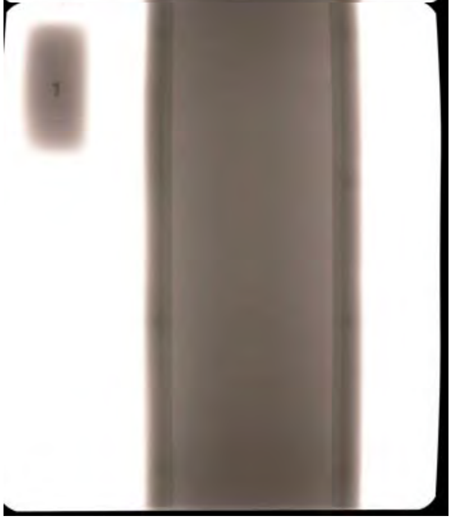
Client:	Haley & Aldrich, Inc.
Project Name:	Maine Health/United Way Development
Project Location:	Portland, ME
GTX #:	8427
Test Date:	08/11/08
Tested By:	edd/md
Checked By:	jdt
Boring ID:	HA08-4
Sample ID:	U-1
Depth, ft:	25-27



Top of Tube



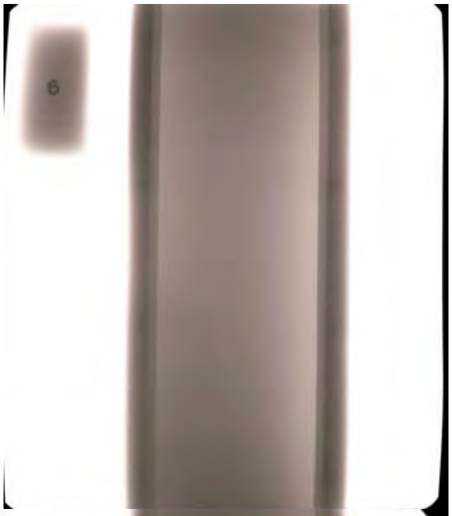
Middle of Tube



Bottom of Tube

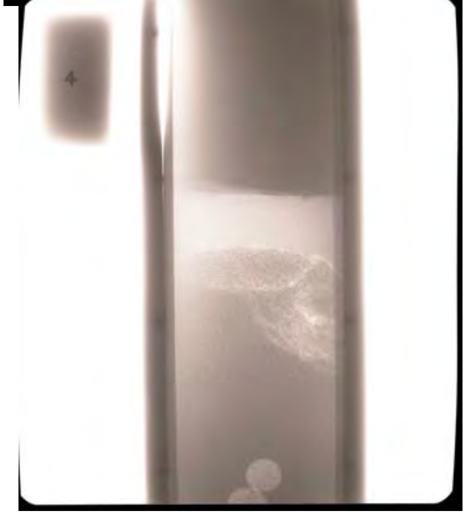
GeoTesting
express
a subsidiary of Geocomp Corporation

Client:	Haley & Aldrich, Inc.
Project Name:	Maine Health/United Way Development
Project Location:	Portland, ME
GTX #:	8427
Test Date:	08/11/08
Tested By:	edd/md
Checked By:	jdt
Boring ID:	HA08-4
Sample ID:	U-2
Depth, ft:	33-35



Top of Tube

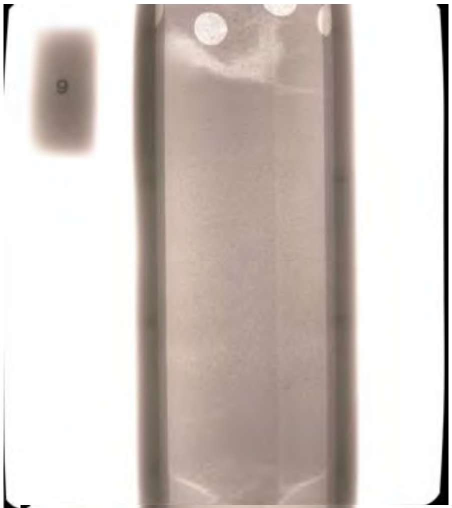
Middle of Tube



Bottom of Tube

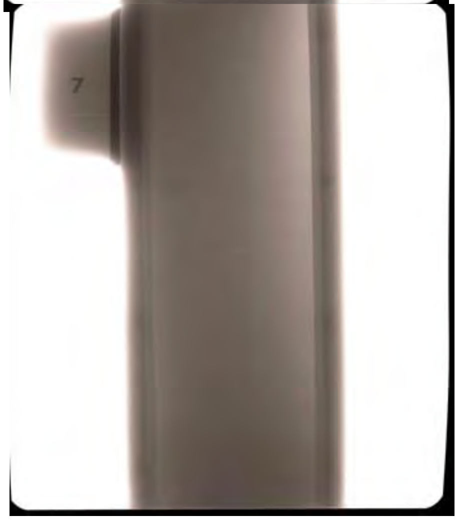
GeoTesting
express
a subsidiary of Geocomp Corporation

Client:	Haley & Aldrich, Inc.
Project Name:	Maine Health/United Way Development
Project Location:	Portland, ME
GTX #:	8427
Test Date:	08/11/08
Tested By:	edd/md
Checked By:	jdt
Boring ID:	HA08-8
Sample ID:	U-1
Depth, ft:	20-22



Top of Tube

Middle of Tube

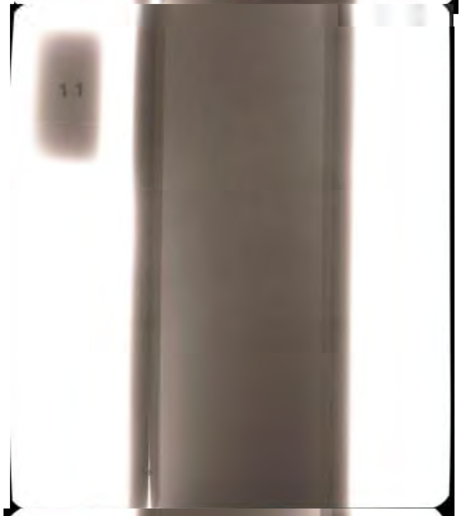


Bottom of Tube

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Haley & Aldrich, Inc.
Project Name:	Maine Health/United Way Development
Project Location:	Portland, ME
GTX #:	8427
Test Date:	08/11/08
Tested By:	edd/md
Checked By:	jdt
Boring ID:	HA08-8
Sample ID:	U-2
Depth, ft:	41-43

Top of Tube



Middle of Tube

Bottom of Tube

Client:	Haley & Aldrich, Inc.
Project Name:	Maine Health/United Way Development
Project Location:	Portland, ME
GTX #:	8427
Test Date:	08/11/08
Tested By:	edd/md
Checked By:	jdt
Boring ID:	HA08-10
Sample ID:	U-1
Depth, ft:	25-27

Top of Tube

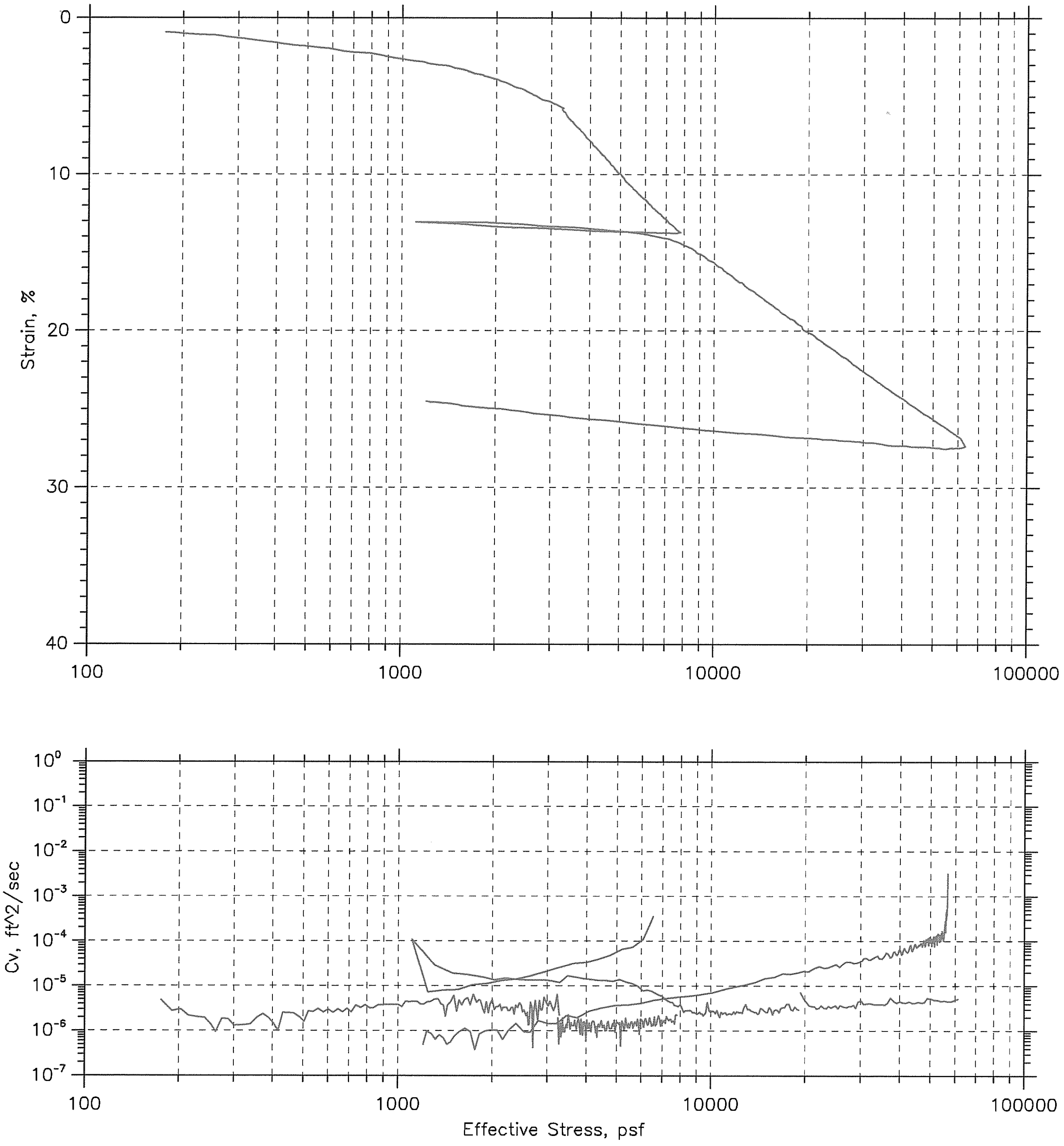
Middle of Tube

Bottom of Tube

Constant Rate of Consolidation

Constant Strain Rate by ASTM D4186

Summary Report



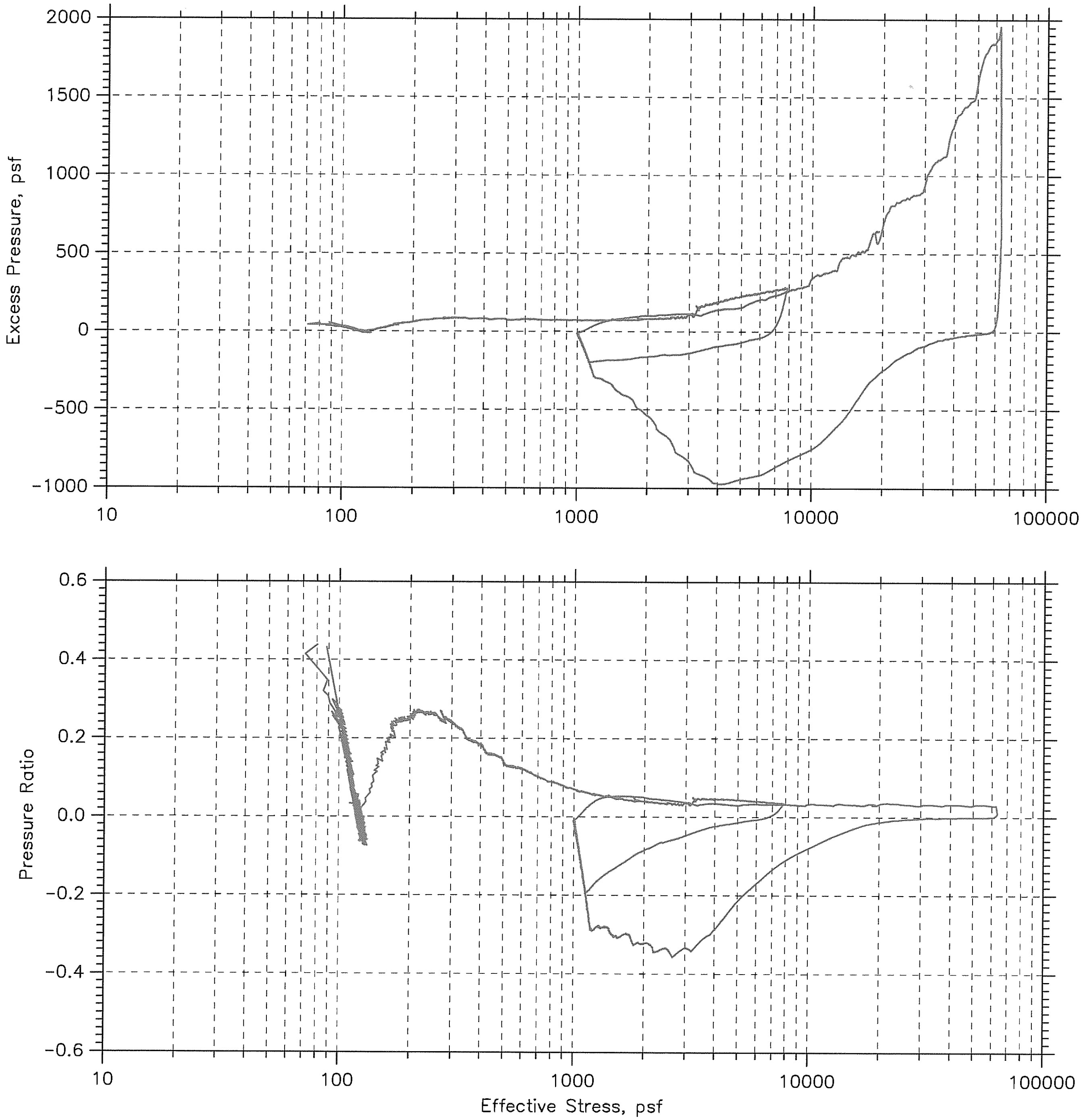
Project: Maine Health	Location: Portland, ME	Project No.: GTX-8427
Boring No.: HA-08-4	Tested By: md	Checked By: jdt
Sample No.: U-2	Test Date: 08/27/08	Depth: 33-35
Test No.: CRC-1A	Sample Type: tube	Elevation: ---
Description: Moist, dark greenish gray clay		
Remarks: System S		

Wed, 03-SEP-2008 11:15:15

Constant Rate of Consolidation

Constant Strain Rate by ASTM D4186

Pressure Curves



Project: Maine Health	Location: Portland, ME	Project No.: GTX-8427
Boring No.: HA-08-4	Tested By: md	Checked By: jdt
Sample No.: U-2	Test Date: 08/27/08	Depth: 33-35
Test No.: CRC-1A	Sample Type: tube	Elevation: ---
Description: Moist, dark greenish gray clay		
Remarks: System S		

Wed, 03-SEP-2008 11:15:16

CRC TEST DATA

Project: Maine Health
Boring No.: HA-08-4
Sample No.: U-2
Test No.: CRC-1A

Location: Portland, ME
Tested By: md
Test Date: 08/27/08
Sample Type: tube

Project No.: GTX-8427
Checked By: jdt
Depth: 33-35
Elevation: ---

Soil Description: Moist, dark greenish gray clay
Remarks: System S

Estimated Specific Gravity: 2.80
Initial Void Ratio: 0.98
Final Void Ratio: 0.50

Liquid Limit: 41
Plastic Limit: 17
Plasticity Index: 24

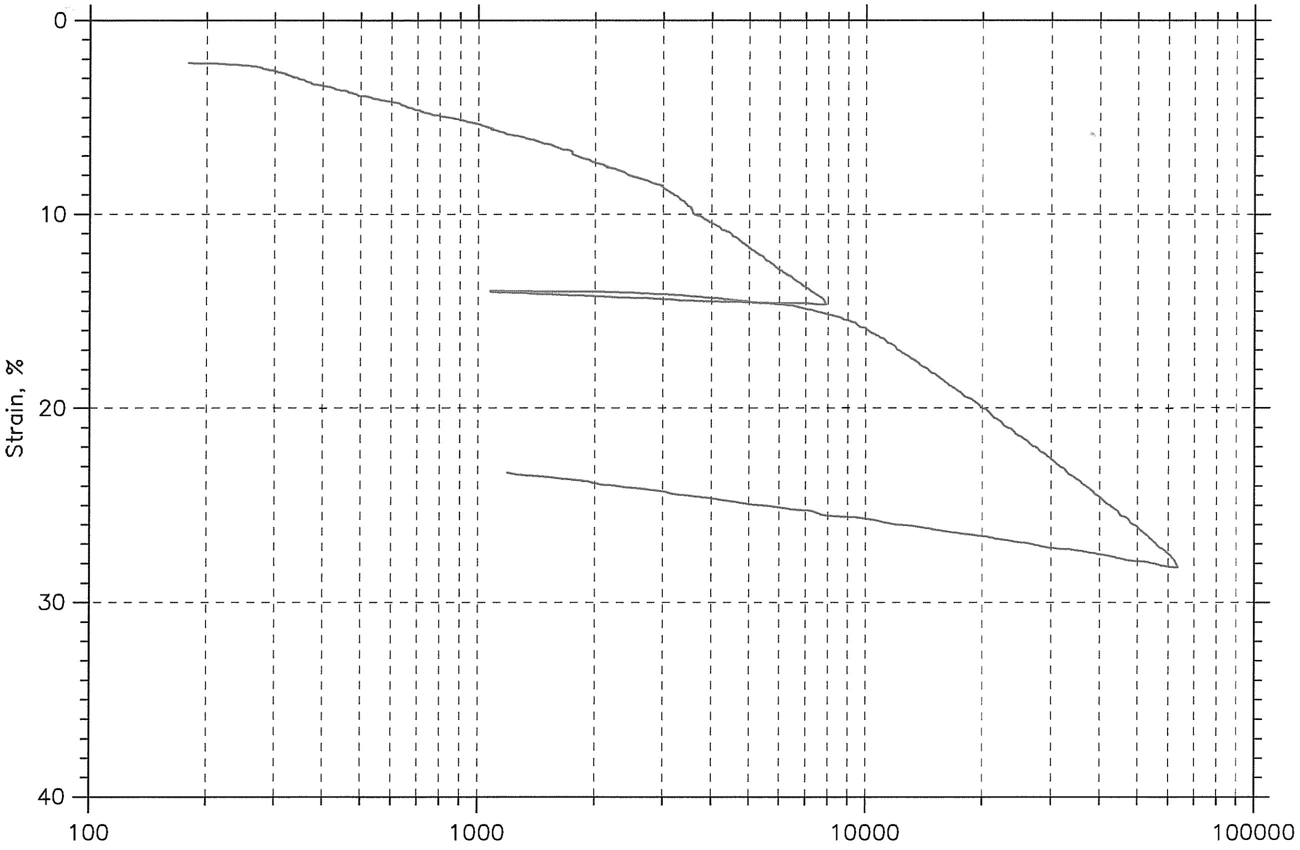
Initial Height: 1.00 in
Specimen Diameter: 2.50 in

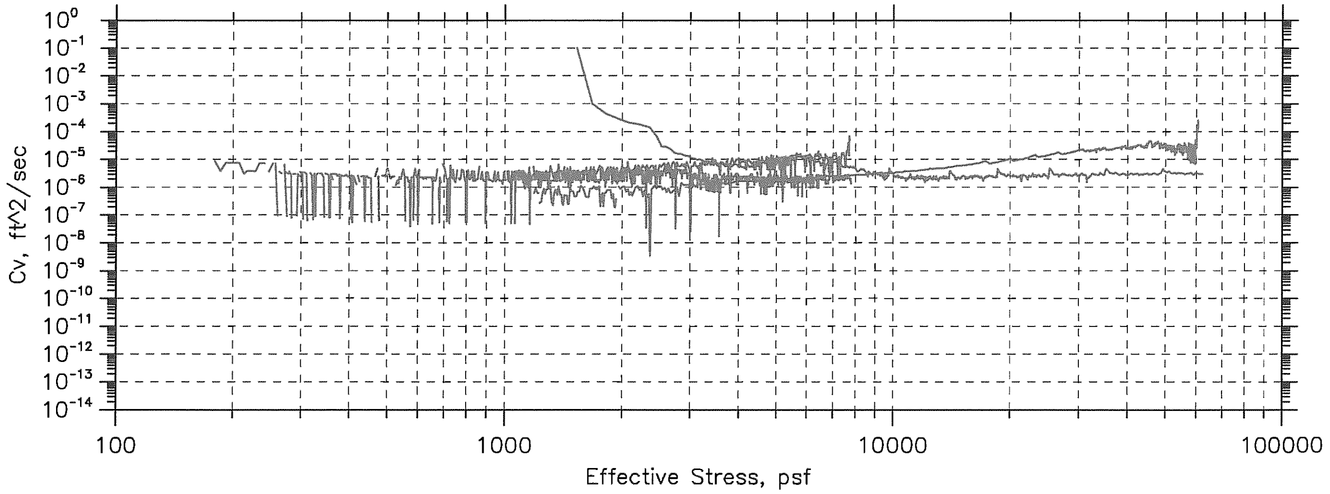
	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	3217	RING		vrayum
Wt. Container + Wet Soil, gm	211.83	353.9	336.26	140.32
Wt. Container + Dry Soil, gm	163.17	318.01	318.01	122.08
Wt. Container, gm	8.29	204.15	204.15	8.27
Wt. Dry Soil, gm	154.88	113.86	113.86	113.81
Water Content, %	31.42	31.52	16.03	16.03
Void Ratio	---	0.98	0.50	---
Degree of Saturation, %	---	90.23	90.62	---
Dry Unit Weight, pcf	---	88.366	116.9	---

Constant Rate of Consolidation

Constant Strain Rate by ASTM D4186

Summary Report





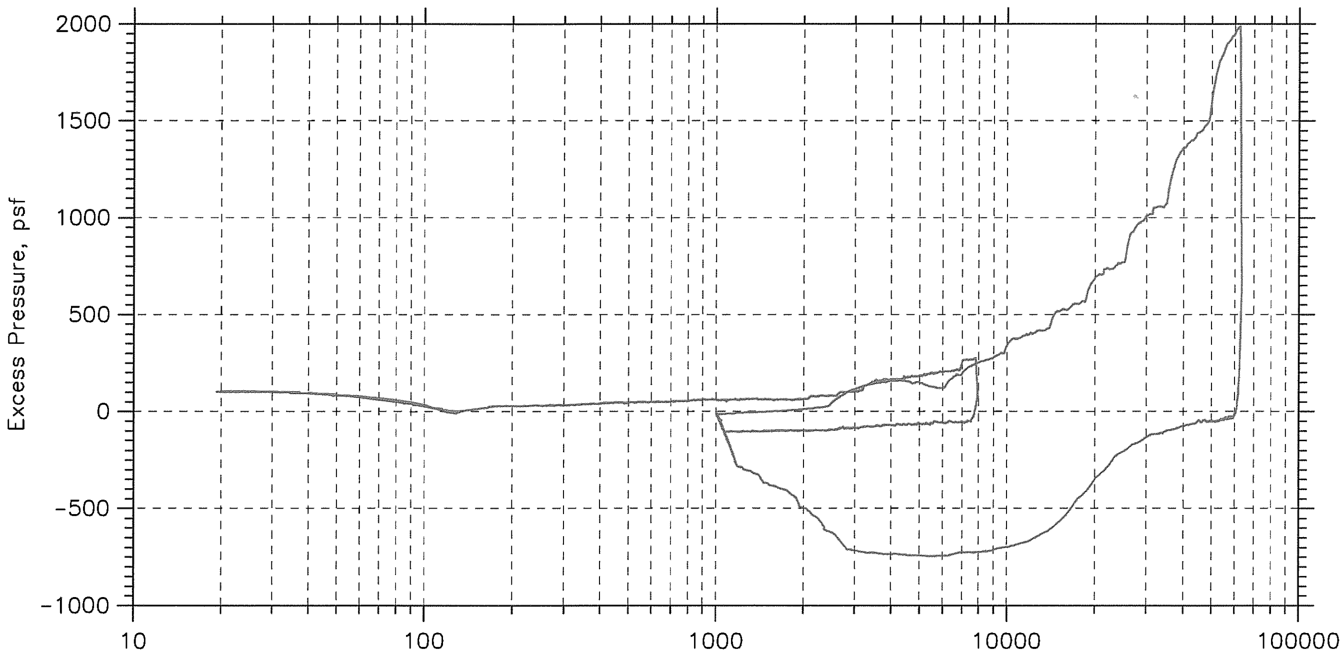
Project: Maine Health	Location: Portland, ME	Project No.: GTX-8427
Boring No.: HA-08-10	Tested By: md	Checked By: jdt
Sample No.: U-1	Test Date: 08/25/08	Depth: 25-27
Test No.: CRC-2	Sample Type: tube	Elevation: ---
Description: Moist, gray clay		
Remarks: System 0		

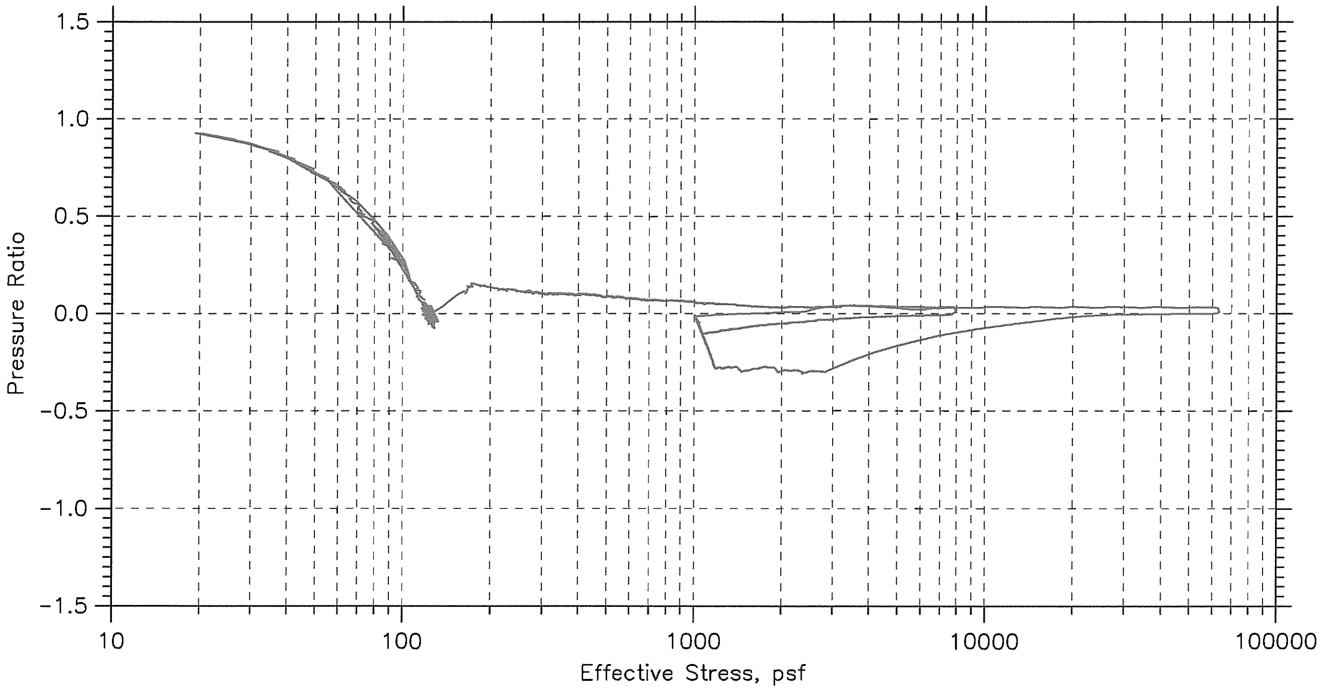
Fri, 05-SEP-2008 11:12:28

Constant Rate of Consolidation

Constant Strain Rate by ASTM D4186

Pressure Curves





Project: Maine Health	Location: Portland, ME	Project No.: GTX-8427
Boring No.: HA-08-10	Tested By: md	Checked By: jdt
Sample No.: U-1	Test Date: 08/25/08	Depth: 25-27
Test No.: CRC-2	Sample Type: tube	Elevation: ---
Description: Moist, gray clay		
Remarks: System 0		

Fri, 05-SEP-2008 11:12:37

CRC TEST DATA

Project: Maine Health
Boring No.: HA-08-10
Sample No.: U-1
Test No.: CRC-2

Location: Portland, ME
Tested By: md
Test Date: 08/25/08
Sample Type: tube

Project No.: GTX-8427
Checked By: jdt
Depth: 25-27
Elevation: ---

Soil Description: Moist, gray clay
Remarks: System O

Estimated Specific Gravity: 2.90
Initial Void Ratio: 1.13
Final Void Ratio: 0.64

Liquid Limit: 38
Plastic Limit: 17
Plasticity Index: 21

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	organic	RING		3171
Wt. Container + Wet Soil, gm	118.23	368.58	349.88	26.19
Wt. Container + Dry Soil, gm	88.77	325.88	325.88	22.93
Wt. Container, gm	8.07	216.55	216.55	8.08
Wt. Dry Soil, gm	80.7	109.33	109.33	14.85
Water Content, %	36.51	39.06	21.95	21.95
Void Ratio	---	1.13	0.64	---
Degree of Saturation, %	---	99.91	99.29	---
Dry Unit Weight, pcf	---	84.848	110.31	---

APPENDIX E

Historic Sanborn Maps

North of Chestnut Street
(midtown 1 and midtown 2)

PORTLAND
MAINE

PUBLISHED BY THE

Sanborn Map and Publishing Co.
LIMITED
117 BROADWAY NEW YORK

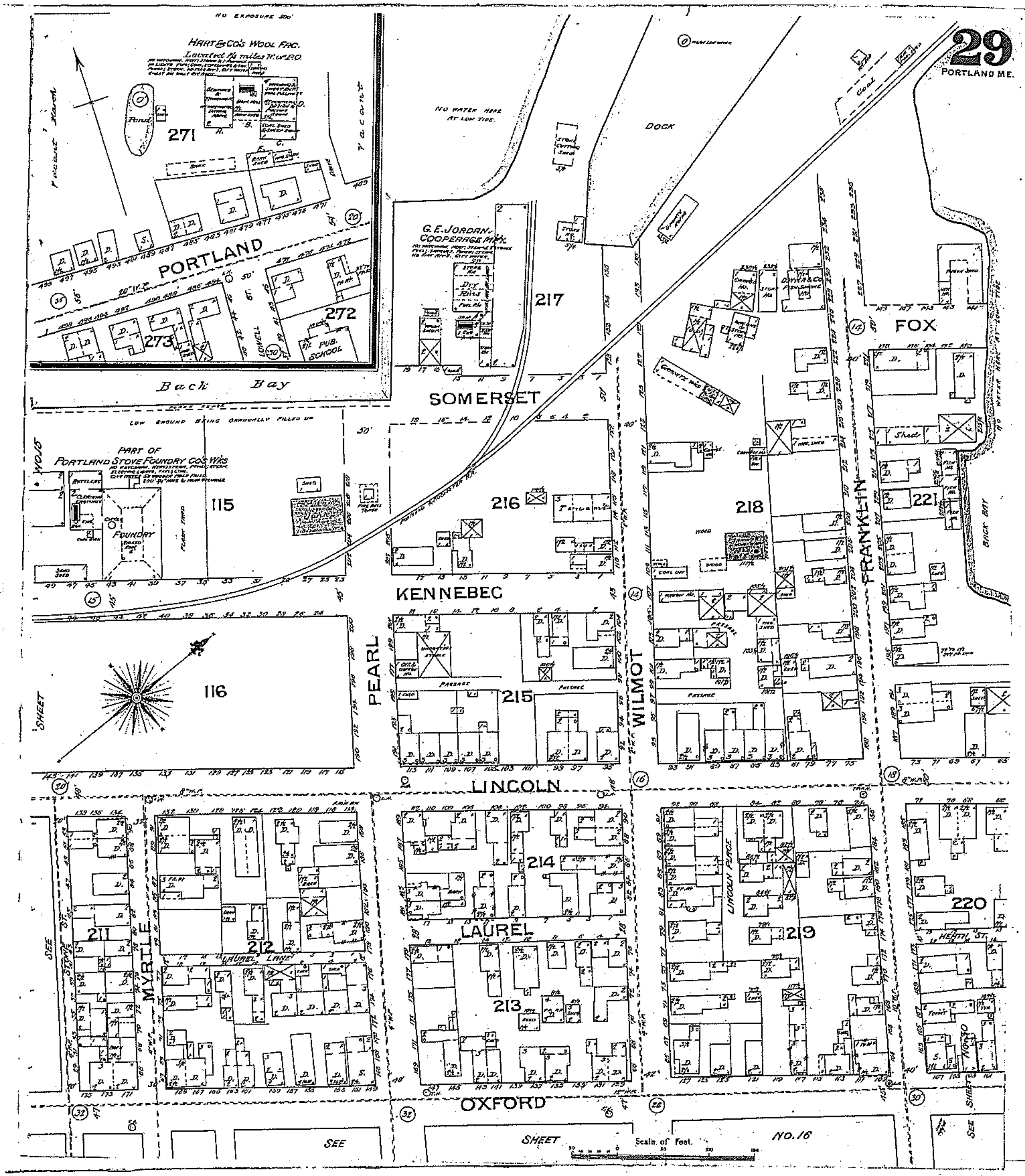
SCALE 50 FT. TO AN INCH

OCT. 1886

INDEX.

* Indicates only one side of Street shown.


PORTLAND ME.
15
Back Bay.
NO WATER RISE AT LOW TIDE.
SOMERSET
LOW GROUND BEING GRADUALLY FILLED IN.
KENNEBEC
LINCOLN
OXFORD
CUMBERLAND
PREBLE
ELM
CEDAR
CHESTNUT
STONE ST.
HALL LANE
MERRILL CT.
ELMWOOD PL.
FOREST AVE.
PORTLAND ST.
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
J.F. MERRILL REFRIGERATOR M'F'Y.
Lumber Piles.
W.H. STONE SASH, PLANING & MOULDING MILL.
E.D. PETTENGILL & CO. PICKLE M'F'Y.
E.H. LAY & CO. SOLDER & DIE
WOODBURY SHEEP SKIN M'F'Y.
PART OF PORTLAND STOVE FOUNDRY CO. WORKS.
PORTLAND & ROCHESTER R.R. FREIGHT HO.
C.H. BUCKNAM. FURNI. M'F'Y.
C.E. WHITNEY CARRIAGE M'F'Y.
CASCO CARBONIZED & CEMENT PIPE CO. M'F'Y.
SEE SHEET No. 13.
SEE SHEET No. 33.
SEE SHEET No. 16.
SEE SHEET No. 10.
SEE SHEET No. 29.
Scale of Feet.


NO EXPOSURE 300'
HART & CO'S WOOL FAC.
Located 1½ miles W. of P.O.
Pond
271
Vacant Land
Vacant
PORTLAND
272
273
PUB. SCHOOL
LOWELL ST.
Back Bay
NO WATER HERE AT LOW TIDE.
DOCK
G. E. JORDAN COOPERAGE MFY.
Dry Kilns
217
SOMERSET
LOW GROUND BEING GRADUALLY FILLED UP
PART OF PORTLAND STOVE FOUNDRY CO'S WKS
FOUNDRY
FLASK YARD
SAND SHED
115
216
218
FOX
FRANKLIN
221
BACK BAY
DYER & CO. FISH SMOKE HO.
KENNEBEC
116
SHEET
PEARL
215
WILMOT
LINCOLN
LINCOLN PLACE
214
219
220
211
MYRTLE
212
LAUREL
LAUREL LANE
213
HEATH ST.
OXFORD
SEE SHEET NO. 16
Scale of Feet.

INSURANCE MAPS of Portland MAINE

Published by the SANBORN-PERRIS MAP CO. LIMITED

Scale 50 Feet to an Inch.

1896

115 Broadway, New York

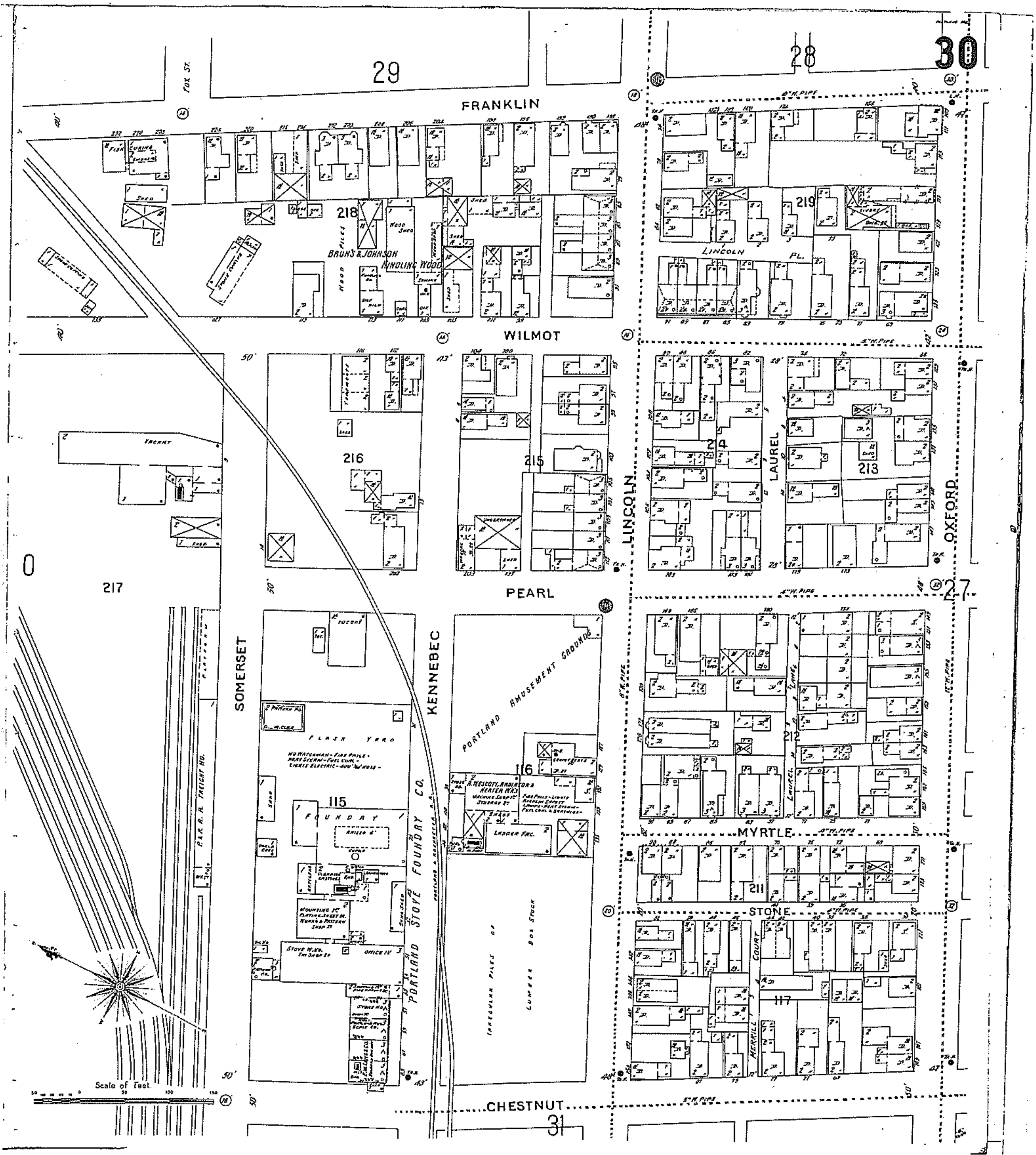
63427 B 2/2

INDEX.

STREETS.

SPECIALS.

* Indicates only one side of Street shown.



30
29
28
FOX ST.
FRANKLIN
LINCOLN PL.
WILMOT
PEARL
MYRTLE
STONE
CHESTNUT
31
27
0
SOMERSET
KENNEBEC
LINCOLN
LAUREL
OXFORD
LAUREL
COURT
MERRILL COURT
218
219
216
215
214
213
217
212
211
117
116
115
FISH CURING
SMOKE HO.
SHED
BRUNS & JOHNSON
KINDLING WOOD
WOOD PILES
WOOD SHED
DRY KILN
UNDERTAKER
FLASK YARD
NO WATCHMAN - FIRE PAILS - HEAT STEAM - FUEL COAL - LIGHTS ELECTRIC - 400' 2½" HOSE -
PATTERN HO.
FOUNDRY
CUPOLA
CLEANING CASTINGS
MOUNTING 1ST PLATING, SHEET M. WORKS & PATTERN SHOP 2D
STOVE W.HO. TIN SHOP 2D
OFFICE 1ST
STOVE HO.
PORTLAND STOVE FOUNDRY CO.
PORTLAND & ROCHESTER R.R.
PORTLAND AMUSEMENT GROUNDS
A. WESCOTT, RADIATOR & HEATER WKS.
MACHINE SHOP 1ST STORAGE 2D
FIRE PAILS - LIGHTS KEROSENE & GAS - HEAT STOVE - FUEL COAL & SHAVINGS
SHAFT
LADDER FAC.
IRREGULAR PILES OF LUMBER BOX STOCK
P. & R. R. R. FREIGHT HO.
PLATFORM
8" W. PIPE
4" W. PIPE
50'
43'
48'
Scale of Feet.
50 40 30 20 10 0 50 100 150

INSURANCE MAPS
OF

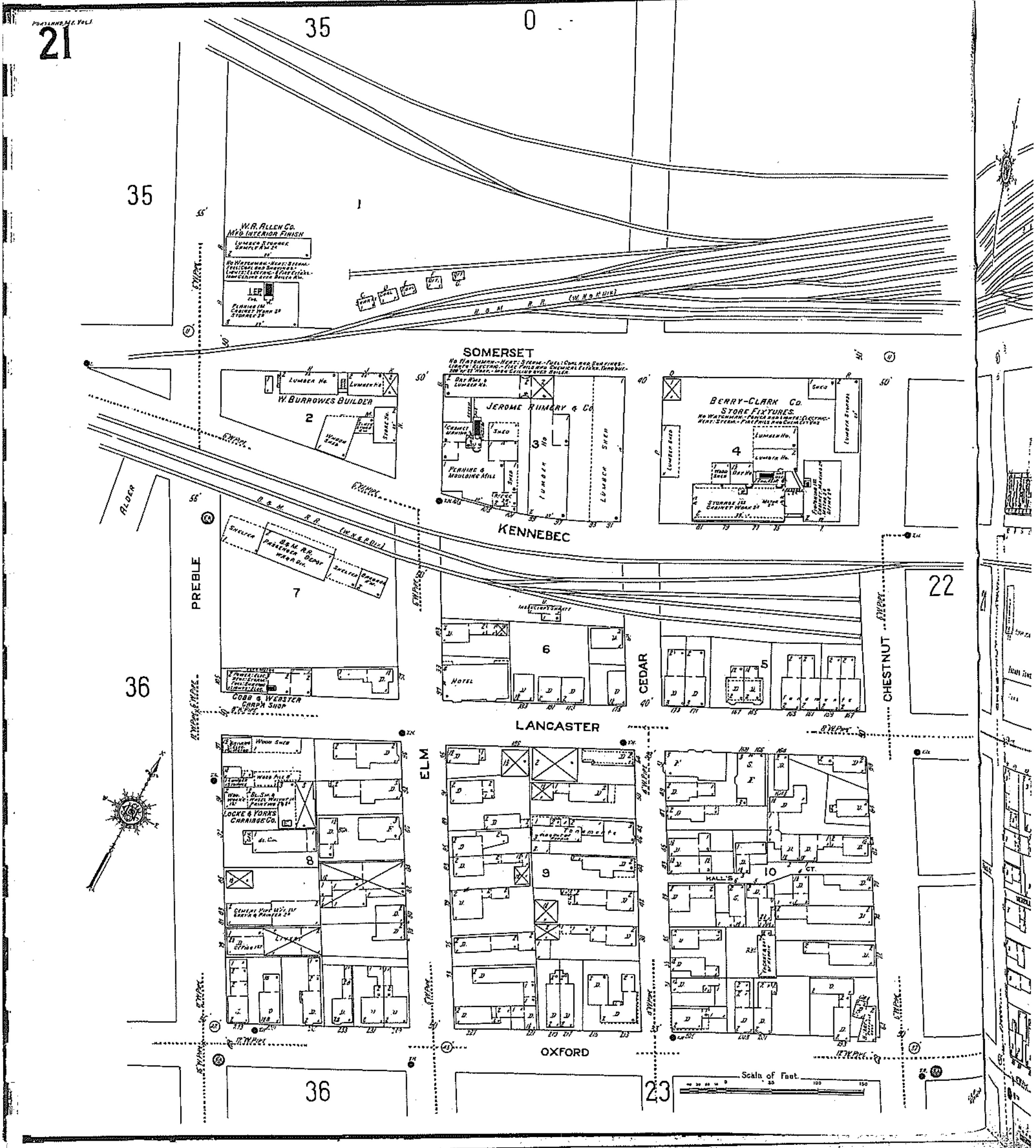
Portland

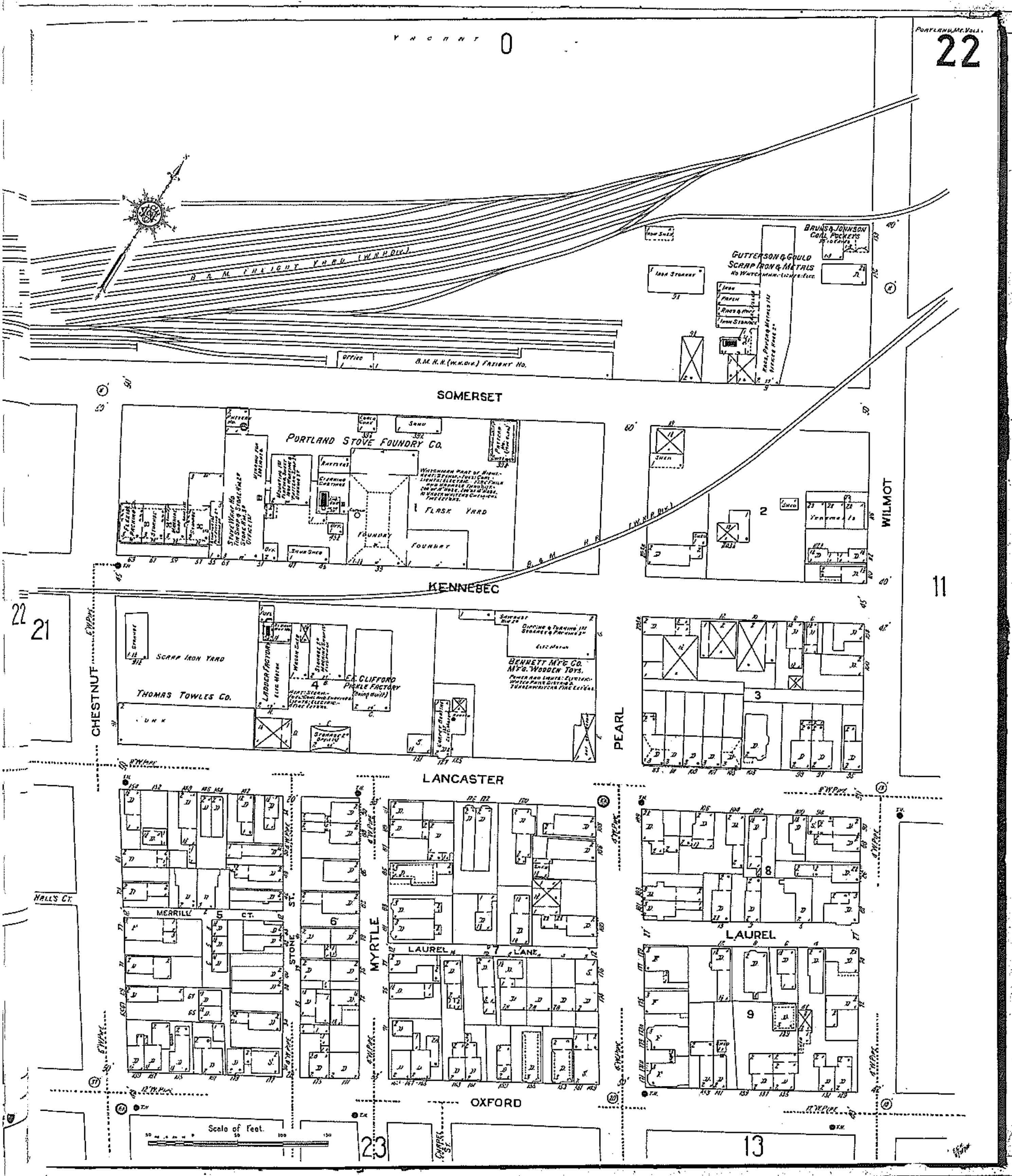
MAINE

VOLUME ONE

PUBLISHED BY THE
SANBORN MAP COMPANY
11 BROADWAY, NEW YORK

1909


PORTLAND, ME. VOL. I
21
35
0
35
36
36
23
22
7
8
9
10
1
2
3
4
5
6
W. R. ALLEN CO.
MFG INTERIOR FINISH
LUMBER STORAGE
SAMPLE RM 2D
PLANING 1ST
CABINET WORK 2D
STORAGE 3D
B. & M. R. R. (W. N. & P. DIV.)
SOMERSET
W. BURROWES BUILDER
LUMBER HO.
WAGON SHED
STORE HO.
JEROME RUMERY & CO
PLANING & MOULDING MILL
CABINET MAKING
SHED
LUMBER HO.
LUMBER SHED
BERRY-CLARK CO.
STORE FIXTURES.
LUMBER SHED
LUMBER STORAGE
WOOD SHED
DRY HO.
STORAGE 1ST
CABINET WORK 2D
KENNEBEC
ALDER
PREBLE
SHELTER
B. & M. R. R. PASSENGER DEPOT W. N. & P. DIV.
BAGGAGE RM.
HOTEL
COBB & WEBSTER
CARP'R SHOP
CEDAR
CHESTNUT
LANCASTER
ELM
LOCKE & YORKS
CARRIAGE CO.
WOOD SHED
WOOD PILE
CEMENT PIPE MFG 1ST
CARRIAGE PAINTER 2D
LIVERY
TENEMENTS
HALL'S CT.
OXFORD
Scale of Feet.
50 40 30 20 10 0 50 100 150


VACANT
0
B. & M. FREIGHT YARD (W. N. P. DIV.)
B. M. R. R. (W. N. DIV.) FREIGHT HO.
Office
BRUNS & JOHNSON COAL POCKETS
GUTTERSON & GOULD SCRAP IRON & METALS
No Watchman - Lights: Elec.
Iron Storage
Iron
Paper
Rags & Rope
Iron Storage
Rags, Paper & Metals 1st Offices Rags 2d
Iron Shed
SOMERSET
PORTLAND STOVE FOUNDRY CO.
Watchman part of night. Heat: Stoves. Fuel: Coal. Lights: Electric.
FLASK YARD
Foundry
Foundry
Sand
Coke & Core
Pattern Ho.
Cleaning Castings
Stove Ware Ho. Tin Shop & Storage 2d Store Rm. 3d Office 1st
Mounting 1st
Shop Shed
Off.
Flask Packing
Storage
Machine Shop
Storage
B. & M. R. R. (W. N. P. DIV.)
KENNEBEC
Scrap Iron Yard
Storage
THOMAS TOWLES CO.
Junk
Ladder Factory
Elec. Motor
Wagon Shed
Storage 1st Machine Shop 2d
Fuel
E. E. CLIFFORD PICKLE FACTORY (being built)
Heat: Steam. Lights: Electric.
4
Storage 1st Office 2d
Sawdust Bin 2d
Dipping & Turning 1st Storage & Packing 2d
Elec. Motor
BENNETT MF'G CO. MF'G. WOODEN TOYS.
Power and Lights: Electric.
Carpet Beating
CHESTNUT
PEARL
WILMOT
2
3
Tenements
Shed
LANCASTER
MERRILL CT.
5
6
7
8
9
STONE ST.
MYRTLE
LAUREL LANE
LAUREL
HALL'S CT.
OXFORD
CHAPEL ST.
6" W. Pipe
8" W. Pipe
12" W. Pipe
Scale of Feet.
50 0 50 100 150
11
13
21
22
23

ME....009

INSURANCE MAPS

OF

Portland

MAINE

VOLUME ONE

PUBLISHED BY THE

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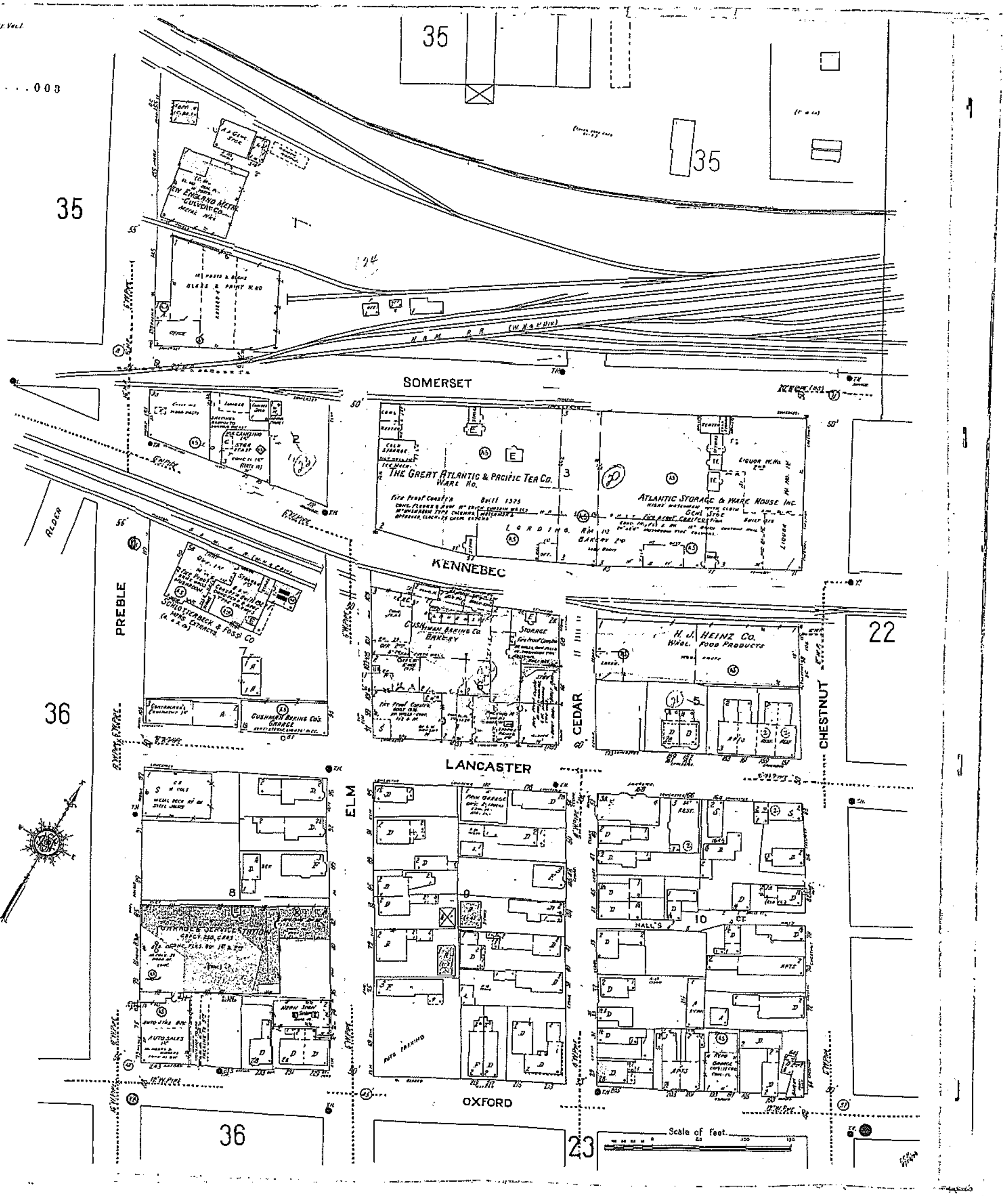
1909

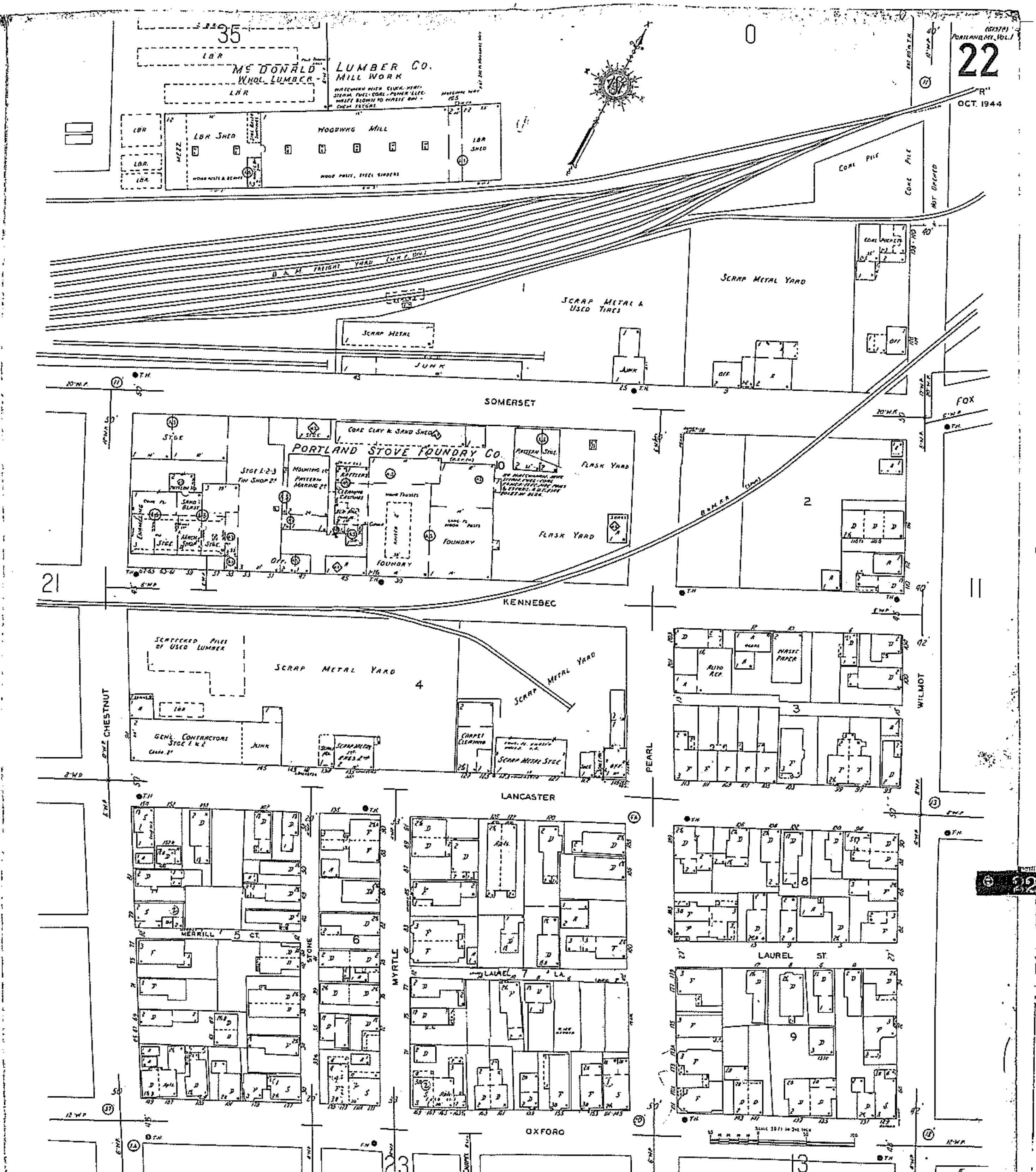
CENSUS
GEOGRAPHY FILES
RECEIVED
JAN 15 1945

Portland, Me. Vol. 1

21

ME....003




35
0
McDonald Lumber Co.
Whol. Lumber - Mill Work
Lbr
Lbr Shed
Woodwkg Mill
Scrap Metal Yard
Scrap Metal & Used Tires
Scrap Metal
Junk
B. & M. Freight Yard
Coke Pile
Not Opened
Coal Pockets
Off.
Somerset
Fox
Portland Stove Foundry Co.
Core Clay & Sand Shed
Stge
Pattern Stge
Flask Yard
Foundry
Mounting
Pattern Making 2nd
Sand Blast
Enameling
B. & M. R.R.
21
11
2
Kennebec
Scattered Piles of Used Lumber
Scrap Metal Yard
4
Gen'l Contractors Stge 1st & 2nd
Junk
Carpet Cleaning
Scrap Metal Stge
Auto Rep.
Waste Paper
3
Chestnut
Pearl
Wilmot
Lancaster
Merrill Ct.
5
6
7
8
9
Stone
Myrtle
Laurel La.
Laurel St.
Oxford
23
13

South of Chestnut Street
(midtown 3 and midtown 4)

PORTLAND

MAINE

PUBLISHED BY THE

Sanborn Map and Publishing Co.

LIMITED

117 BROADWAY NEW YORK

SCALE 50 FT. TO AN INCH

OCT. 1886

INDEX.

STREETS.

SPECIALS.

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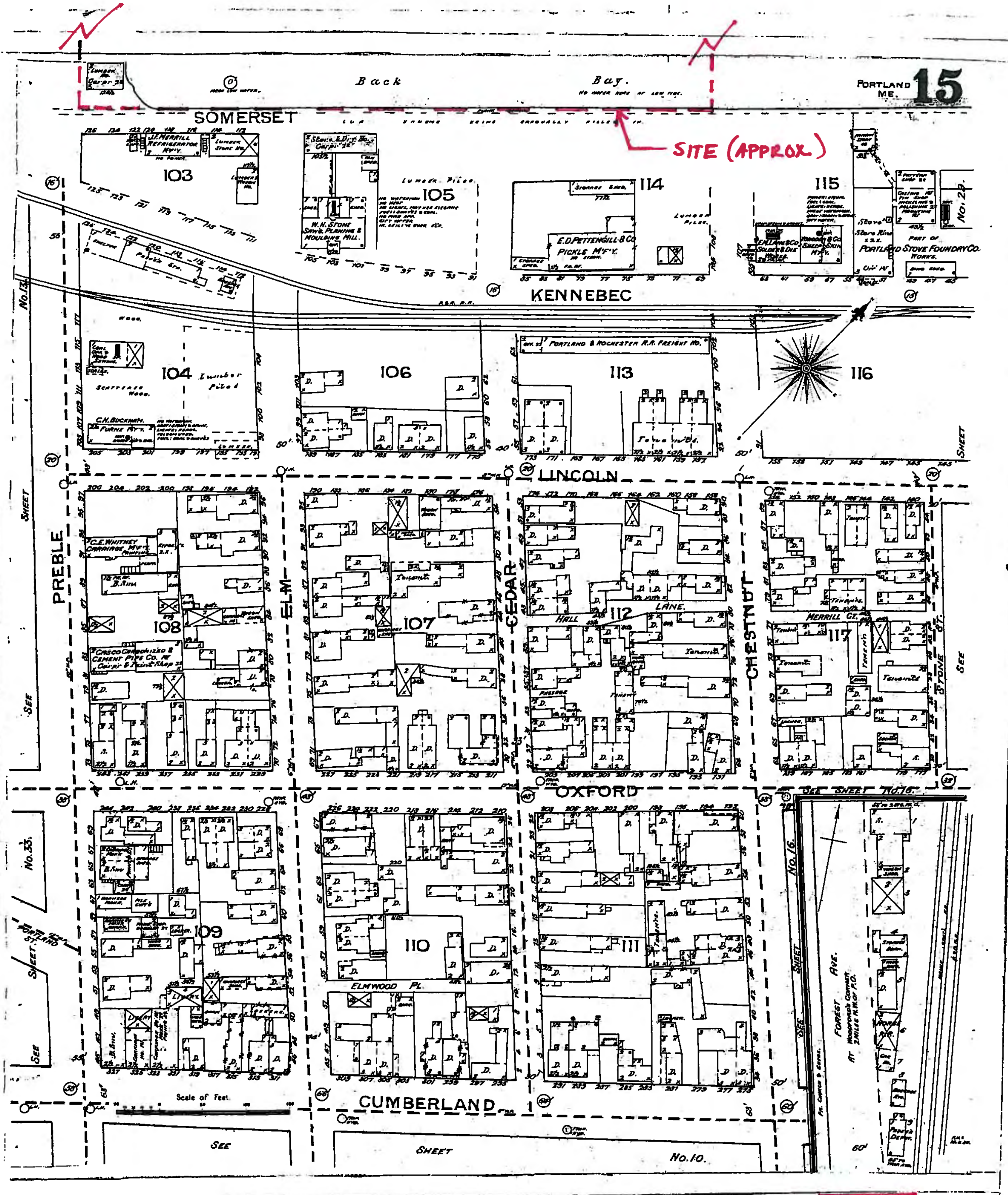
PORTLAND ME.
15
Back Bay.
SOMERSET
KENNEBEC
LINCOLN
OXFORD
CUMBERLAND
PREBLE
ELM
CEDAR
CHESTNUT
STONE ST.
FOREST AVE.
ELMWOOD PL.
HALL
LANE
MERRILL CT.
PORTLAND ST.
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
J.F. MERRILL REFRIGERATOR MFY.
W.H. STONE SAWG. PLANING & MOULDING MILL
E.D. PETTENGILL & CO. PICKLE MF'Y.
PORTLAND & ROCHESTER R.R. FREIGHT HO.
PORTLAND STOVE FOUNDRY CO. WORKS
C.H. BUCKNAM FURNE MFY.
C.E. WHITNEY CARRIAGE MFY.
CASCO CARRIAGE & CEMENT PIPE CO.
Lumber Piled
Tenements
Scale of Feet
SEE SHEET No. 10.
SEE SHEET No. 16.
No. 13.
No. 33.
No. 29.
SITE (APPROX.)

1886

ME....003

INSURANCE MAPS

Portland

MAINE

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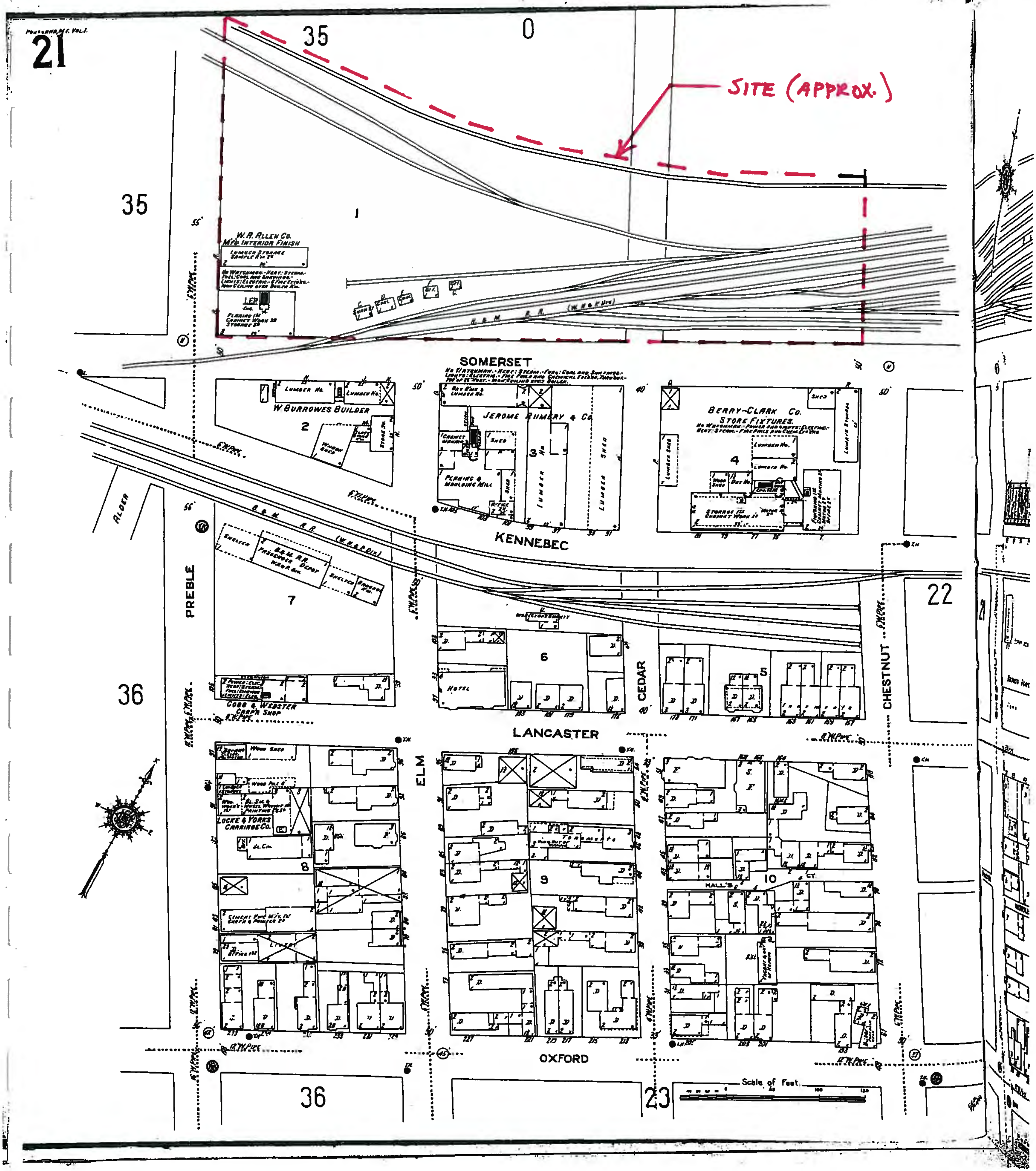
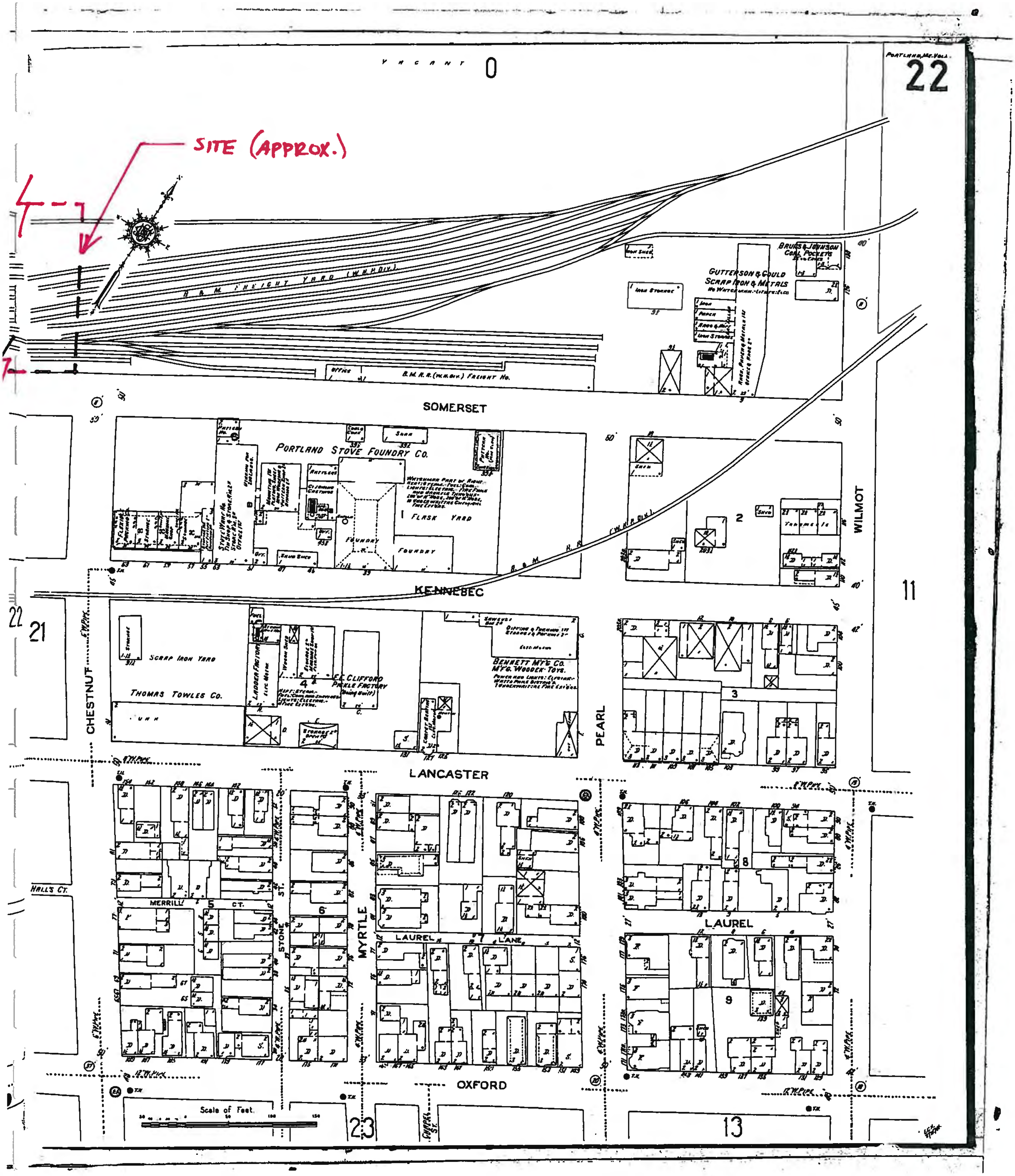
JAN 15 1945



SITE (APPROX.)

1909


Portland, Me. Vol. 1
22
Vacant
0
SITE (APPROX.)
B. & M. Freight Yard (W. N. P. Div.)
Office
B. M. R. R. (W. N. P. Div.) Freight Ho.
Gutterson & Gould Scrap Iron & Metals
Bruns & Johnson Coal Pockets
Iron Storage
Somerset
Portland Stove Foundry Co.
Flask Yard
Foundry
B. & M. R. R. (W. N. P. Div.)
Kennebec
Wilmot
2
11
21
22
Scrap Iron Yard
Thomas Towles Co.
Ladder Factory
E. E. Clifford Pickle Factory (Being Built)
4
Bennett Mfg. Co. Mf'g. Wooden Toys
Pearl
3
Chestnut
Lancaster
Merrill Ct.
5
Stone St.
6
Myrtle
Laurel Lane
7
8
Laurel
9
Hall's Ct.
Oxford
Scale of Feet
23
Chapel St.
13

1909

ME....003

INSURANCE MAPS

Portland

MAINE

VOLUME ONE

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JAN 15 1945

Portland, Me. Vol. I.

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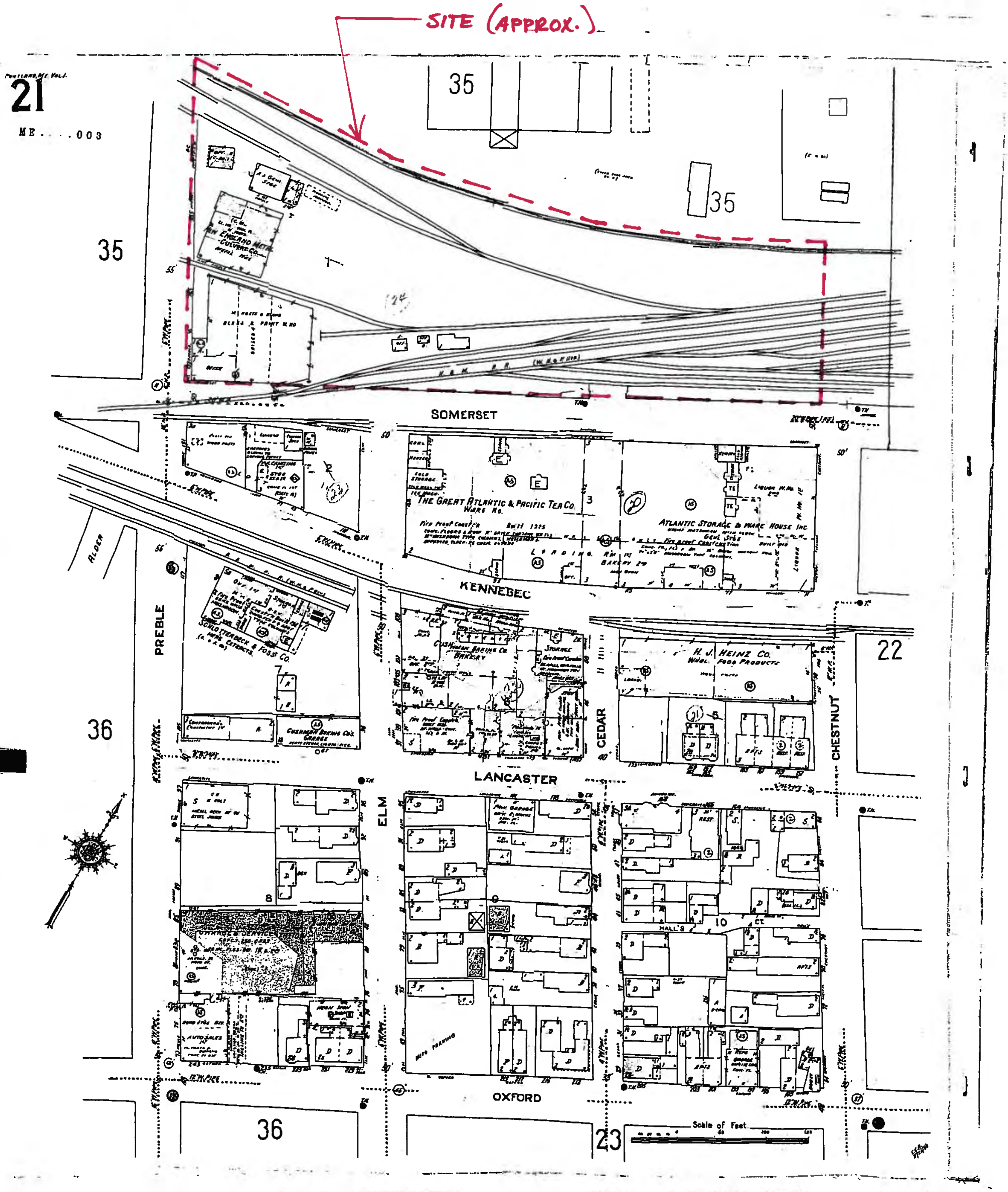
ME....003



1909-1950

EXHIBIT 16

ENVIRONMENTAL & HISTORICAL CONSIDERATIONS

ENVIRONMENTAL & HISTORIC CONSIDERATIONS

A. WILDLIFE AND FISHERIES

DeLuca-Hoffman Associates, Inc.* contacted the Maine Department of Inland Fisheries & Wildlife and the U.S. Department of the Interior on October 29, 2012 to obtain information on the potential impacts to wildlife and fisheries habitat within the project area. On November 1, 2012, Maine Department of Inland Fisheries & Wildlife responded that the site had no known significant wildlife habitats on this site.

The U.S. Department of the Interior responded that no federally listed or proposed threatened and endangered species under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area, with the exception of occasional, transient bald eagles.

Request letters from DeLuca-Hoffman Associates, Inc. and the responses from the Maine Department of Inland Fisheries and Wildlife and the U.S. Department of the Interior are included at the end of this section.

B. HISTORIC SITES

DeLuca-Hoffman Associates, Inc. contacted the Maine Historic Preservation Commission on October 29, 2012 to obtain information any potential historic, architectural, or archaeological significance on the project site. The Maine Historic Preservation Commission responded on December 3, 2012 that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act.

C. UNUSUAL NATURAL AREAS

The Maine Department of Conservation was contacted on October 29, 2012 and informed of the proposed development. DeLuca-Hoffman Associates, Inc., sought to obtain information on locations of rare, endangered or registered critical areas, which the project may impact. The Maine Department of Conservation database indicated that there are no rare botanical features documented specifically within the project area. The Department provided a list of rare and unique botanical features documented for assistance to any biologist conducting inventory of the site.

No unusual areas are known to exist on the project site.

D. ATTACHMENTS

- Correspondence to/from Department of Inland Fisheries & Wildlife
- Correspondence to Maine Historic Preservation Commission
- Correspondence to/from Maine Natural Areas Program

**DeLuca Hoffman Associates, Inc. was acquired by Fay, Spofford & Thorndike. The two names are used interchangeably in portions of the midtown documents.*

ATTACHMENTS

Correspondence To/From
Department of Inland Fisheries & Wildlife
Maine Historic Preservation Commission
Maine Natural Areas Program

DH

DeLUCA-HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 8
SOUTH PORTLAND, MAINE 04106
TEL. 207 775 1121
FAX 207 879 0896

- SITE PLANNING AND DESIGN
- ROADWAY DESIGN
- ENVIRONMENTAL ENGINEERING
- PERMITTING
- AIRPORT ENGINEERING
- CONSTRUCTION ADMINISTRATION

October 29, 2012

Mr. Steve Timpano
Maine Department of Inland Fisheries & Wildlife
State House Station 41
Augusta, ME 04333

Subject: Proposed Maritime Landing Project
Somerset Street, Portland, Maine

Dear Steve:

Our office has been retained by The Federated Companies to assist in the preparation of permit applications for a proposed mixed use development comprised of a parking garage, multistory multi-family housing, and some limited retail space. The project site is depicted on the enclosed aerial photograph and includes Lots 1 to 3 and 5 to 8 on the attached survey plan. The actual project will impact portions of Somerset and Elm Street and a recently constructed public trail system that is located on the survey as lots 4 and 9. The land area is about 3.5 acres in total size. The City of Portland conducted demolition and environmental cleanups on the premises over the past several years. Consequently, the site is currently an unimproved lot with some limited weeds around the perimeters. Photographs of the parcel are enclosed.

If you have any questions with regards to this letter, please contact our office.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.

William G. Hoffman, P.E.
President

WGH/cmd

Enclosure

c: Matt Jefferies
Greg Shinberg

R:\3062-Maritime Landing\Admin\Permitting\State Agency\3062 2012.10.29 MDIFW.doc

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0041

PAUL R. LEPAGE
GOVERNOR

CHANDLER E. WOODCOCK
COMMISSIONER

November 1, 2012

NOV - 5 2012

William G. Hoffman, P.E.
DeLuca-Hoffman Associates, Inc.
778 Main Street
Suite 8
South Portland, ME 04106

RE: Information Request, Maritime Landing Project, Somerset Street, Portland

Dear William:

Per your request received October 30 we have searched current Department records for known occurrences of Rare, Threatened, and Endangered species, designated Essential and Significant Wildlife Habitats, and fisheries habitat concerns within the vicinity of the proposed Maritime Landing Project on Somerset Street in Portland.

Our records indicate no occurrences of rare, threatened, or endangered animal species within the project area. Additionally, our department has not mapped any Essential or Significant Wildlife Habitats or Fisheries Habitats that would be directly impacted by your project.

This consultation review has been conducted specifically for known MDIF&W jurisdictional features and should not be interpreted as a comprehensive review for the presence of all regulated features that may occur on site. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

Steve Walker
Acting Environmental Review Coordinator

Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: Maritime Landing (Version 1)

Maine Department of
Inland Fisheries and Wildlife

Miles
0 0.125 0.25 0.5 0.75 1

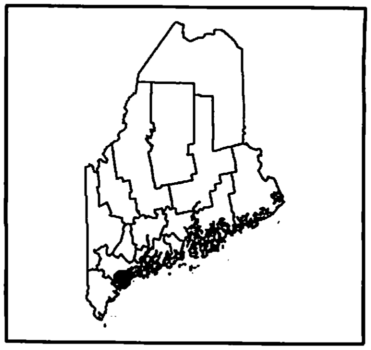
Projection: UTM, NAD83, Zone 19N

Date: 11/1/2012

⊙ ProjectPoints
— ProjectLines
☐ ProjectPolys
▨ ProjectSearchAreas

☐ Deer Winter Area
☐ LURC p-fw
☐ Cooperative DWAs
☐ Seabird Nesting Islands
☐ Shorebird Areas
☐ Inland Waterfowl/Wading Bird
▨ Shoreland Zoning_Iwwh
☐ Tidal Waterfowl/Wading Bird
☐ Significant Vernal Pools
☐ Environmental Review Polygons

☐ Roseate Tern
☐ Piping Plover/Least Tern
☐ Aquatic ETSc (2.5 mi review)
▨ Rare Mussels (5 mi review)
☐ A and B List Ponds
☐ Arctic Charr Habitat
E. Brook Trout Joint Venture Subwatershed Classification
☐ Redfin Pickerel/Swamp Darter Habitats (buffer100ft)
☐ Special Concern-occupied habitats(100ft buffer)
☐ Wild Lake Trout Habitats



DH

DeLUCA-HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 8
SOUTH PORTLAND, MAINE 04106
TEL. 207 775 1121
FAX 207 879 0896

- SITE PLANNING AND DESIGN
- ROADWAY DESIGN
- ENVIRONMENTAL ENGINEERING
- PERMITTING
- AIRPORT ENGINEERING
- CONSTRUCTION ADMINISTRATION

October 30, 2012

Mr. Mark McCullough
Endangered Species Specialist
U. S. Fish and Wildlife Service
1168 Main Street
Old Town, Maine 04468

Subject: Proposed Maritime Landing Project
Somerset Street, Portland, Maine

Dear Mark:

Our office has been retained by The Federated Companies to assist in the preparation of permit applications for a proposed mixed use development comprised of a parking garage, multistory multi-family housing, and some limited retail space. The project site is depicted on the enclosed aerial photograph and includes Lots 1 to 3 and 5 to 8 on the attached survey plan. The actual project will impact portions of Somerset and Elm Street and a recently constructed public trail system that is located on the survey as lots 4 and 9. The land area is about 3.5 acres in total size. The City of Portland conducted demolition and environmental cleanups on the premises over the past several years. Consequently, the site is currently an unimproved lot with some limited weeds around the perimeters. Photographs of the parcel are enclosed.

If you have any questions with regards to this letter, please contact our office.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.

William G. Hoffman, P.E.
President

WGH/cmd

Enclosure

c: Matt Jefferies
Greg Shinberg

R:\3062-Maritime Landing\Admin\Permitting\State Agency\3062 2012.10.30 USF&W.doc

U.S. Fish and Wildlife Service

Natural Resources of Concern

This resource list is to be used for planning purposes only — it is not an official species list.

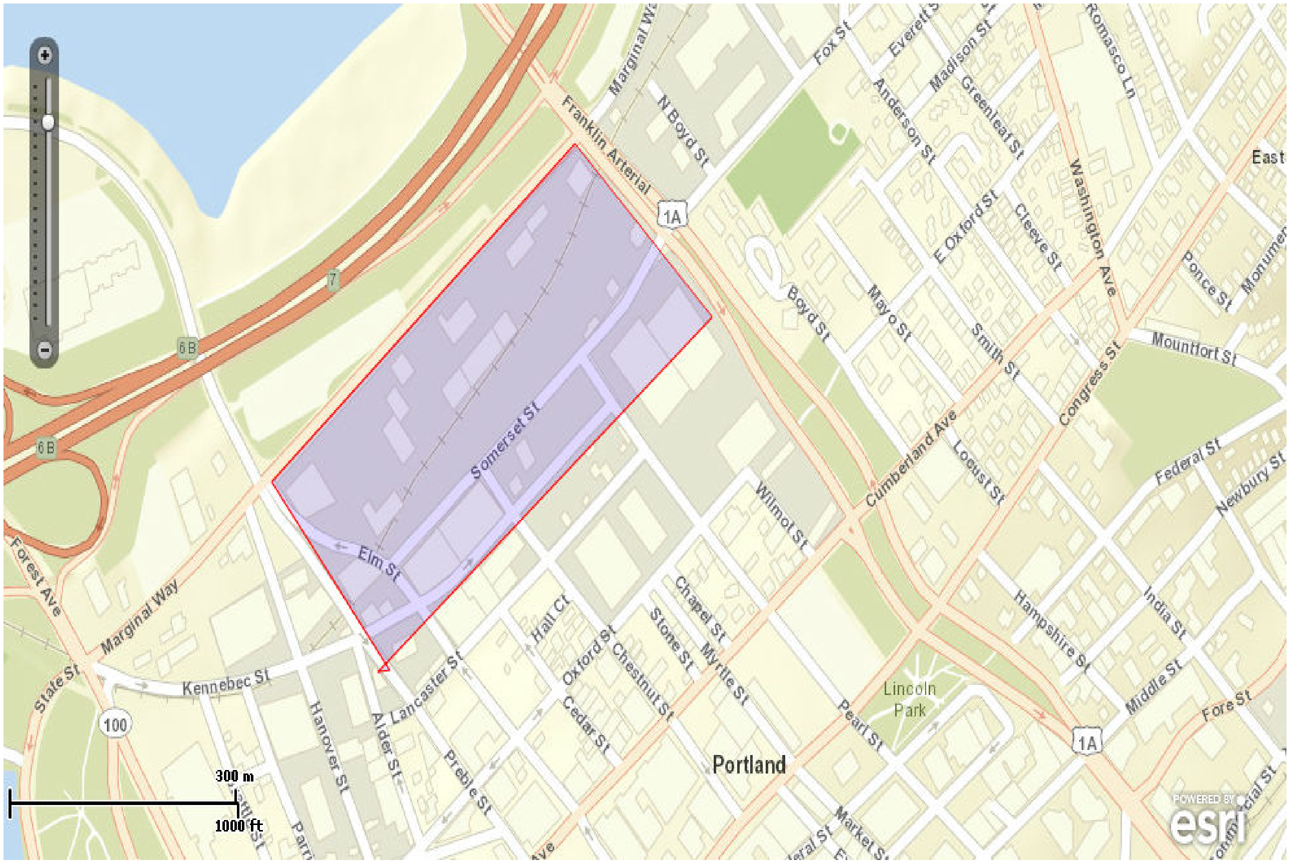
Endangered Species Act species list information for your project is available online and listed below for the following FWS Field Offices:

MAINE ECOLOGICAL SERVICES FIELD OFFICE
17 GODFREY DRIVE, SUITE 2
ORONO, ME 04473
(207) 866-3344
http://www.fws.gov/mainefieldoffice/index.html

Project Name:

Maritime Landing

Project Location Map:



Project Counties:

Cumberland, ME

Geographic coordinates (Open Geospatial Consortium Well-Known Text, NAD83):

MULTIPOLYGON (((-70.26325535 43.66018566, -70.2631886 43.6601257, -70.2633817 43.6601102, -70.26325535 43.66018566)), ((-70.26325535 43.66018566, -70.2651412 43.6618798, -70.2601201 43.6650309, -70.2578456 43.6634166, -70.26325535 43.66018566)))

Project Type:

Development

U.S. Fish and Wildlife Service

Natural Resources of Concern

Endangered Species Act Species List (USFWS Endangered Species Program).

There are a total of **1** threatened, endangered, or candidate species, and/or designated critical habitat on your species list. Species on this list are the species that may be affected by your project and could include species that exist in another geographic area. For example, certain fishes may appear on the species list because a project could cause downstream effects on the species. Please contact the designated FWS office if you have questions.

Species that may be affected by your project:

Mammals	Status	Species Profile		Contact
New England Cottontail rabbit (*Sylvilagus transitionalis*)	Candidate	species info		Maine Ecological Services Field Office

FWS National Wildlife Refuges (USFWS National Wildlife Refuges Program).

There are no refuges found within the vicinity of your project.

FWS Migratory Birds (USFWS Migratory Bird Program).

Most species of birds, including eagles and other raptors, are protected under the Migratory Bird Treaty Act (16 U.S.C. 703). Bald eagles and golden eagles receive additional protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668). The Service's Birds of Conservation Concern (2008) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).

NWI Wetlands (USFWS National Wetlands Inventory).

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

DeLUCA-HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 8
SOUTH PORTLAND, MAINE 04106
TEL. 207 775 1121
FAX 207 879 0896

- SITE PLANNING AND DESIGN
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- AIRPORT ENGINEERING
- CONSTRUCTION ADMINISTRATION

October 29, 2012

Mr. Earle Shettleworth
Maine Historic Preservation Commission
55 Capitol Street
State House Station 65
Augusta, ME 04333

Subject: Proposed Maritime Landing Project
Somerset Street, Portland, Maine

Dear Earle:

Our office has been retained by The Federated Companies to assist in the preparation of permit applications for a proposed mixed-use development comprised of a parking garage, multistory multi-family housing, and some limited retail space. The project site is depicted on the enclosed aerial photograph and includes Lots 1 to 3 and 5 to 8 on the attached survey plan. The actual project will impact portions of Somerset and Elm Street and a recently constructed public trail system that is located on the survey as lots 4 and 9. The land area is about 3.5 acres in total size. The City of Portland conducted demolition and environmental cleanups on the premises over the past several years. Consequently, the site is currently an unimproved lot with some limited weeds around the perimeters. Photographs of the parcel are enclosed.

This project will be an urban infill of recent redevelopment in the area as shown on the key map and photographs which accompany this letter.

If you have any questions with regards to this letter, please contact our office.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.

William G. Hoffman, P.E.
President

WGH/cmd

Enclosure

c: Greg Shinberg
Matt Jefferies

R:\3062-Maritime Landing\Admin\Permitting\State Agency\3062 2012.10.24 MHPO.doc

PHOTOGRAPH KEY MAP
MARITIME LANDING PROJECT
PORTLAND, MAINE
PREPARED BY DELUCA-HOFFMAN ASSOCIATES, INC.

**PHOTO 1 – Trader Joe's & Eastern Mountain Sports Building
(Year Built 2001)**

**PHOTO 2 – Trader Joe's & Eastern Mountain Sports Building
(Year Built 2001)**

DH
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**Maritime Landing – Portland, Maine
Building Onsite and Buildings in Vicinity of
Proposed Project
Photos Taken 10-25-12**

PHOTO 3 – Three Story Concrete Masonry Building (currently storage)
(Year Built 1925)

PHOTO 4 – Three Story Concrete Masonry Building (currently storage)
(Year Built 1925)

PHOTO 5 – Three Story Concrete Masonry Building (currently storage)
(Year Built 1925)

PHOTO 6 – Three Story Concrete Masonry Building (currently storage)
(Year Built 1925)

PHOTO 7 – New Housing
(Year Built 2008)

PHOTO 8 – Walgreen Pharmacy & Salon Centric Building
(Year Built 2010)

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Maritime Landing – Portland, Maine
Building Onsite and Buildings in Vicinity of Proposed Project
Photos Taken 10-25-12

**PHOTO 9 – Walgreen Pharmacy & Salon Centric Building
(Year Built 2010)**

**PHOTO 10 – Walgreen Pharmacy & Salon Centric Building
(Year Built 2010)**

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**Maritime Landing – Portland, Maine
Building Onsite and Buildings in Vicinity of
Proposed Project
Photos Taken 10-25-12**

PHOTO 11 – Planet Fitness Building
(Year Built 2005)

PHOTO 12 – Three Story Concrete Masonry Building (currently storage)
(Year Built 1925)

PHOTO 13 – Three Story Concrete Masonry Building (currently storage)
(Year Built 1925)

PHOTO 14 – Building to be Razed
(Owned by City of Portland)

PHOTO 15 – Department of Health & Human Services Building
(Year Built 1999)

PHOTO 16 – Service & Car Care Center
(Year Built 1969)

PHOTO 17 – Warehouse Construction Yard Area
(Year Built 1940)

PHOTO 18 – Warehouse Construction Yard Area
(Year Built 1940)

PHOTO 19 – Warehouse Construction Yard Area
(Year Built 1940)

PHOTO 20 – Service & Car Care Center
(Year Built 1969)

PHOTO 21 – AT&T Store & Planet Dog Building
(Year Built 1981)

PHOTO 22 – AT&T Store & Planet Dog Building
(Year Built 1981)

PHOTO 23 – Whole Foods Building
(Year Built 2006)

PHOTO 24 – MULTI-USE INDUSTRIAL
(Year Built 1920)

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Maritime Landing – Portland, Maine
Building Onsite and Buildings in Vicinity of Proposed Project
Photos Taken 10-25-12

PHOTO 25 – Multi-Use Industrial
(Year Built 1920)

PHOTO 26 – Portland Architectural Salvage
(Year Built 1900)

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Maritime Landing – Portland, Maine
Building Onsite and Buildings in Vicinity of Proposed Project
Photos Taken 10-25-12

Reed, Robin K

From:	Sandi Keef <skeef@DelucaHoffman.com>
Sent:	Friday, November 09, 2012 9:39 AM
To:	Reed, Robin K
Cc:	WHoffman@DelucaHoffman.com; CDaniell@DelucaHoffman.com
Subject:	Maritime Landing ; Somerset Street, Portland
Attachments:	Locus Map.pdf lots 1 to 3, 5 to 8

Robin,

Enclosed is the Locus Map for the Maritime Landing project in Portland, Maine. This shows the adjacent tax map and lot numbers and is being sent to follow-up our conversation of Wednesday, 11/7/12 and our original request dated 10/29/12.

Thank you,

Bill Hoffman

DeLuca-Hoffman Associates, Inc.
778 Main Street, Suite 8
South Portland, ME 04106
207.775.1121
207.879.0896 fax
skeef@delucahoffman.com

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

Kirk F. Mohney

Kirk F. Mohney,
Deputy State Historic Preservation Officer
Maine Historic Preservation Commission

12/3/12
Date

DH

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CONSULTING ENGINEERS

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- SITE PLANNING AND DESIGN
- ROADWAY DESIGN
- ENVIRONMENTAL ENGINEERING
- PERMITTING
- AIRPORT ENGINEERING
- CONSTRUCTION ADMINISTRATION

October 29, 2012

Ms. Lisa St. Hilaire, Assistant Ecologist
Maine Natural Areas Program
17 Elkins Lane
93 State House Station
Augusta, Maine 04333

Subject: Proposed Maritime Landing Project
Somerset Street, Portland, Maine

Dear Lisa:

Our office has been retained by The Federated Companies to assist in the preparation of permit applications for a proposed mixed use development comprised of a parking garage, multistory multi-family housing, and some limited retail space. The project site is depicted on the enclosed aerial photograph and includes Lots 1 to 3 and 5 to 8 on the attached survey plan. The actual project will impact portions of Somerset and Elm Street and a recently constructed public trail system that is located on the survey as lots 4 and 9. The land area is about 3.5 acres in total size. The City of Portland conducted demolition and environmental cleanups on the premises over the past several years. Consequently, the site is currently an unimproved lot with some limited weeds around the perimeters. Photographs of the parcel are enclosed.

If you have any questions with regards to this letter, please contact our office.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.

William G. Hoffman, P.E.
President

WGH/cmd

Enclosure

c: Matt Jefferies
Greg Shinberg

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STATE OF MAINE
DEPARTMENT OF CONSERVATION
93 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0093

PAUL R. LEPAGE
GOVERNOR

WILLIAM H. BEARDSLEY
COMMISSIONER

NOV 16 2012

October 31, 2012

William Hoffman
DeLuca-Hoffman Associates, Inc.
778 Main Street, Suite 8
South Portland, ME 04106

Re: Rare and exemplary botanical features in proximity to: Maritime Landing Development Project, Somerset Street, Portland, Maine

Dear Mr. Hoffman:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received October 31, 2012 for information on the presence of rare or unique botanical features documented from the vicinity of the project site in Portland, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. Based on the information in our files and the landscape context of this project, there is a low probability that rare or significant botanical features occur at this project location.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

EXHIBIT 17

COMPLIANCE WITH APPLICABLE ZONING AND B-7 LAND USE REQUIREMENTS

ZONING REVIEW FOR FINAL LEVEL III SITE PLAN REVIEW

(by Article, Division, Section, sub-section, as applicable)

Division 17 B-7 Mixed Use Development District Zone

Section 14-295 Permitted Uses:	
(a) Commercial Uses	All contemplated commercial uses are allowed as included in the first 23 use items on the list in this subsection. No surface parking use is proposed on any of the land comprising the **midtown** development.
(b) Residential Uses	**midtown** will include multi-family dwellings allowed under use item 1.
(c) Public Infrastructure	Pad-mounted outdoor switchgear and transformers will be provided by CMP to service **midtown** as allowed under use item 1. Landscaped (planted and paved) pedestrian plaza areas will be provided between **midtownOne** and **Two** (courtyard and mews) and at the west end of **midtownFour** (terrace) as allowed under use item 3.
(d) Institutional	No institutional uses are proposed
(e) Other	No drive-up retail or repair facilities, no transportation facilities, and no wind energy facilities are proposed on the land comprising the **midtown** development.

Section 14-296 Conditional Uses:	
(a) uses conditioned by Planning Board	
1. Commercial Uses	No conditional commercial uses are proposed.
2. Industrial Uses	No industrial uses are proposed.
3. Structured Parking	**midtownTwo** contains structured parking.
a.1. Ground Floor Use	The entire ground floor of the parking structure, other than the area required for access to and egress from the parking decks above, will be devoted to retail use under items 1 to 23 of section 14-295 (a).
a.ii. 35 ft. Setback from primary street right-of-way	Due to the reduced dimension of the property between Somerset St. and the Bayside Trail, the Somerset façade is set back to 10 feet. Applicant seeks conditional use permit to allow parking garage and a waiver to allow the façade set back less than 35 ft. from primary street right-of-way.

a.iii. Façade design	The entirety of all four facades of the structure which are visible from public ways and will be architecturally composed, designed, and detailed in accordance with the B-7 Design Standards; the facades will feature green screens composed of living plant material.
4. Utility Substations	No enclosed buildings or built structures as described in this sub-section are proposed.
5. Buildings greater than 125 ft. high	No buildings of height greater than 125 feet are proposed for the **midtown** development
(b) Uses conditioned under Section 14-474	None of the listed uses are proposed

Section 14-297 Prohibited Uses:	No Prohibited uses are proposed at **midtown**

Section 14-298 Dimensional Requirements	
(c) 2.a. 10 ft. Maximum Street Setback	All facades including the garage are setback no more than 10 feet from Somerset, Pearl, Chestnut, and Elm Streets. The Pearl Street façade of **midtownOne** is setback to allow future widening of Pearl Street right of way. The façade of **midtownFour** is straight, while the street line is curved. Because of the change in grade from Elm St. to the finished floor of the building, additional sidewalk is provided and the façade is setback an average of ten ft.
(g) Maximum Building Height per Overlay Map	Buildings are in A and B zones with respective maximum heights of 125 and 105 ft. **midtownOne** in the A zone is 72 ft. high; **midtownTwo** in the B zone is 92 ft. high; **midtownThree** and **Four** in the A zone are 72 ft. high. All buildings comply.
(h) Minimum Building Height	The “A” zone minimum height is 4 floors; B zone minimum height is 3 floors. All buildings are six or more floors, therefore in compliance.

Section 14-299 Performance Standards	
(a) Enclosed dumpsters	All proposed refuse and recycling containers will be held within the **midtown** buildings awaiting pick-up. Service rooms for this purpose are shown on the ground floor plans of each building.

(b) Noise	No processes within the **midtown** buildings are expected to generate noise greater than 60 dBA daytime/50dBA nighttime. Roof-mounted mechanical equipment will not generate noise greater than this standard at 4'0" above grade at the **midtown** property line or at the nearest nearby residential property line.
(c) Vibrations	No proposed activities within the **midtown** buildings are expected to produce vibration perceptible at the property line without instruments.
(d) Environmental Emissions	With the exception of commercial restaurant kitchen equipment, no permanently installed combustion equipment or appliances are contemplated at **midtown**; therefore, emissions will be only general residential ventilation. Emissions from autos using the garage are otherwise regulated (as mobile sources of emission not through building standards).
(e) Outdoor Storage of Vehicles	No vehicles will be stored outside at **midtown**.
(f) Off Street Parking and Loading	**midtownTwo** is a structured garage to provide off street parking for all uses in the development. The requirements of Division 21 Off-street Loading do not apply to developments in the B-7 district per this sub-section.
(g) Flood Plain Management	The **midtown** buildings do not have basements or cellars; the ground floor of all buildings will be constructed at an elevation above the FEMA 100 yr. predicted flood elevation.
(h) Glare, Radiation, Fumes	None of these will be emitted by the **midtown** buildings.
(i) Enclosure	Residential uses will be enclosed but for potential balconies, terraces, and/or French windows; retail uses will be enclosed but for possible food service use at courtyard and mews at **midtownOne** and **Two** and terrace facing the street or trail at Elm St. at **midtownFour**.
(j) Outdoor Storage	No outdoor storage by tenants of the **midtown** development will be permitted
(k) Odor	No obnoxious odors will be generated.
(l) Smoke	No smoke will be emitted

(m) Discharge into Sewers	Discharge to the sanitary sewer will consist only of ordinary domestic waste. No process waste of any sort is expected from **midtown**.
(n) Lighting	Retail display lighting is expected to partially wash the sidewalks and trail but not to shine on adjacent properties. A partial waiver is sought from Technical Manual to allow higher lighting levels typical of retail areas.
(o) Building Entrances	All **midtown** buildings will have pedestrian entrances facing street frontages.

Division 14 B-7 Signage

Section 14-366.5 Applicability	See review of division 22 below and the signage plan included with the drawings. Individual retail tenant signs are the responsibility of those future tenants.

Division 20 Off-street Parking

Section 14-331 Definition	Off-street parking provided at **midtown** will be in a garage structure designed to meet the standards set forth in the Technical Manual
Section 14-332 Parking Requirements by Use	
(a) 3.a. Residential	One space per dwelling unit to be provided. *Does not apply: see Exception 14-332.2 (c)*
(a) 3.b. Shared Use Vehicles	Shared use vehicles may be provided within the garage: one such vehicle will satisfy the requirement for eight residential spaces. *Does not apply: see Exception 14-332.2 (c)*
(h) Retail Stores	One space required per 200 sq. ft. of floor area in excess of 2000 sq. ft. not ground used for storage. *Does not apply: see Exception 14-332.2 (c)*
(l) Restaurants	One space per 150 sq. ft. of area not used for storage or food preparation. *Does not apply: see Exception 14-332.2 (c)*
Section 14-332.1 Zone Specific Exceptions	
(i) Parking in B-7 Mixed Use Zone	Parking in B-7 projects shall be governed by Section 14-332.2 (c)
Section 14-332.2 Categorical Exceptions	
(c) Parking Requirement in B-7 Zone	Parking for projects in B-7 zone shall be established by the Planning Board based on a parking analysis submitted by Applicant and upon recommendation of the City Transportation Engineer.

Section 14-332.3 Bicycle Parking	Bicycle parking will be provided by a combination of on-street hitches, and off street spaces in garage per 14-526(a)(2)
Section 14-334 Parking on same lot with use in Non-Residential zones.	
(a) Distance from Principal Building	Applicant will seek exception from Planning Board for parking in **midtownTwo** to serve uses in all other buildings and to allow parking more than 100 ft., but not more than 1500 ft., from principal entrances of the residential buildings. (note that the entrances to **midtownOne** and **midtownThree** are within 100 ft. of the garage entrances)
(b) Same Ownership	All four **midtown** buildings will not be held in common ownership following development.
Section 14-341 Aisle Widths	Aisles in parking garage will be in conformance with Technical Manual.

Division 21 Off-street Loading

Does Not Apply	Per Section 14-299 as noted above, Off-street loading is not required in the B-7 zone.

Division 22 signs

Section 14-368 Regulations	
(a) Signs allowed, allowed with permit, not allowed.	Signs will be mounted on the proposed buildings to identify: the project (vertical face-mounted signs on garage); each residential building at its primary entry; and commercial/retail tenants at their street entries. Street numbers and public parking entry signage will also be provided.
(b) Permits	Building Identity and residential entry signs will be designed and permitted with building design; retail signage will be designed and permitted by tenants along with tenant improvement permitting.
(c) Design, Construction, Maintenance	Signs will be designed, mounted and maintained in accordance with this division of the code.
(d) Signage Plan	A draft signage plan for all form buildings in the project is included with this application. It shows the locations on the buildings where signs may be located but does not detail the messages, mounting, or sign fabrication details.

Section 14-369 Computations	
(a) Area of Individual Signs	The aggregate area of all signs on each façade is shown on the Signage Plan.
Section 14-369.5 Tables	
(a) Table 1, signs by type	Only allowed, permitted and conditional signs as listed in table 1 will be proposed.
(b) Table 2, regulations by zone – table 2.8 regulations in B-7 Mixed Use Urban Zone	
Freestanding Signs	Does not apply as freestanding signs are only allowed where buildings are set back 20 ft. or more from street. All setbacks at midtown are ten feet or less.
Building Signs	Ground Floor Retail Tenants will be allowed one sign not greater than 2 sq ft. of signage for each linear foot of lease frontage, where a lease faces two or more streets the tenant will be allowed a sign on each façade. Each building will have one Building ID sign not greater than 5% of the wall area on which the sign is placed. The project will have two Project ID signs mounted on the garage facades as shown. The total of building ID signage areas plus the Project ID signage areas will not exceed 5% of the sum of the areas of the facades on which these signs are mounted.
Window Signs	Tenants will be allowed to have window signs and permitted awning signs within the total area allotted by lease frontage.
Roof Signs not allowed	No roof signs are proposed.

Article V. Site Plan

Section 14-526 Environmental Standards	
(c) 2.1. (i) Natural Surveillance	Having full time residents overlooking public spaces has been shown to be the best form of natural surveillance. Midtown will bring the eyes of the tenants of more than three hundred new apartments with direct view of the Bayside Trail Somerset, Pearl, Chestnut and Elm streets, and the Mews and Courtyard.

(d) 1.a. No reduction in natural ventilation to abutting structures; no unsafe wind conditions for users of public spaces.	The nearest structure to the buildings of midtown is *Trader Joes* on Elm Street near midtown Four. This is a windowless façade and therefore ventilation of Trader Joes will be unchanged. We understand that a wind study was undertaken for a previous development on the site featuring buildings substantially greater than two times as high. That study found no unsafe conditions; reduced height brings wind speed decreases – it is therefore concluded that the currently proposed structures will not create unsafe wind conditions at any adjacent publicly accessible open spaces.
(d) 1. b. No diminution in value or utility of neighboring parcels.	By replacing vacant land with active retail street frontage and medium density residential development, the proposed project will likely increase the value of neighboring parcels.
(d) 1.c. HVAC venting	Heating and cooling will be via electric heat pumps, hence there will be no products of combustion.
(d) 2. Shadows	The B-7 district shadow requirements are regulated under the B-7 design guidelines. See review of these standards in a separate attachment, along with the required shadow study provided as Exhibit.
(d) 3. Snow and Ice Shedding	The buildings will be designed without wide flat ledges, out sloping cornices or sills which might accumulate and potentially shed snow and/or ice onto the public way.
(d) 4. View Corridors	The low-rise buildings protect designated downtown view corridors.
(d) 5. Historic Resources	does not apply
(d) 6.b. Architectural Lighting	Exterior lighting will be located only at entrances for safety, security and a sense of welcome, and at egress and service doors as required by code. These lights will be shielded or cut-off fixtures that will emit no direct light upwards nor into adjacent residential properties.
(d) 7.a (i) HVAC equipment noise	Compressor/condenser (outdoor) units for the heating cooling systems will be located on the roofs and screened from view from the public way by parapets. As shown by the cut sheets provide in exhibit #20b they emit 55 dBA sound pressure at the roof, and likely less than 50dBA at street level seventy feet below

(d) 7.a. (ii) Emergency Generator	Does not apply – generator not required for low-rise buildings or naturally ventilated garage.
(d) 8.a. Signage	See separate review of commercial signage as regulated by Division 22 of the code.
(d) 9.a(i) Zoning related Design Standards	See separate review of B-7 Design Standards
(d) 9.a. (viii) Extra Height in district A	Does not apply – proposed building heights of 75 and 92 feet are well below the allowed heights of 105 and 125 feet.

Prepared by CBT/Childs Bertman Tseckares Inc, Architects, for The Federated Companies

November 14, 2014

SUMMARY OF B-7 DESIGN STANDARDS

Summary of B-7 Design Standards - *Prepared by CBT Architects*

Principle A, Urban Design			Plan **for midtown** Development	**midtown Final** Level III Design
Standard A-1	Sense of Place	■	*The identity and "sense of place" of Bayside is based on design elements that contribute to the character of the district.* The Plan for **midtown** Development responds to listed characteristics as follows: · Forms strong street edge as existing pattern development; · Extends the street grid at Pearl, Chestnut, and Elm streets; · Raises Somerset St. in response to flood concerns (topography); · Maintains view corridors to and between Downtown, Back Cove, Deering Oaks and the East End; · Buildings are arranged to allow access to light and air; · Street extensions and Mews provide public connection to the pedestrian and bicycle network and other public spaces; · Access to the regional transportation system is provided via Somerset St. to Franklin to I-295; and · Providing an opportunity for innovative architectural and landscape design. The Plan for **midtown** Development has characteristics which strengthen the identity of the Bayside district by: · Enhancing the artistic personality of Bayside in the future;	**midtown** building designs respond as follows: · Forms street edges at Somerset, Pearl, Chestnut and Elm Streets; · Mediates the grade change between the new elevation of Somerset Street and the Bayside Trail with gentle steps and ramps; · Public Mews between Garage midtownTwo and Apartment midtownOne provides pedestrian and visual continuity of Myrtle St.; · The buildings have been designed in a modern or contemporary aesthetic using a muted range of warm natural neutral colors with vibrant accents **midtown** building designs support the intent of the Plan for Development by:

			· Respecting the industrial vernacular of existing buildings;	· Design in modern industrial style;
			· Encouraging innovative architectural design that expresses the aesthetic of the time in which it is being built;	· Innovative and contemporary use of materials and color;
			· Strengthening the connections to adjacent neighborhoods of Bayside, Downtown, Back Cove, Deering Oaks, and the East End by providing one side of a dense pedestrian-oriented commercial spine along Somerset Street;	· Provides continuous retail frontage on Somerset and Elm Streets;
			· preserving views;	· Buildings are lower than allowed heights;
			· Mitigating traffic/pedestrian concerns across major streets through design of ADA access ramps and painted crosswalks;	
			· Creating mixed retail and residential uses that have a neighborhood main street scale;	· Provides mixed use of residential over retail;
			· Creating neighborhood green spaces as places to gather; and	· Provides Mews and Courtyard; enhances the Bayside Trail; and
			· Utilizing native plant materials in landscaping.	· Design will utilize drought-tolerant native and non-invasive species
			Characteristics in *The Vision for Bayside* that are not applicable to the <u>Plan for **midtown** Development</u>:	
			· Encouraging adaptive reuse;	· No buildings exist on site;
			· Respecting the “patina” of age and maintaining historic materials;	· No historic materials exist on site;
			· Mitigating the widths of the major arterials such as Marginal Way and Franklin Arterial which border the neighborhood because these arterials are not within the Development Plan area; and,	· Site does not border these streets;
			· Highlighting Portland and Cumberland Streets as “Main Streets” to the traditional residential portions of the neighborhood, as these streets are not within the Development Plan area.	· Site does not border these streets

Standard A-2	Edges and Transitions	■	*Transitions between larger scale mixed use buildings and smaller scale residential uses shall be designed so that there is a seamless connection.* The area planned for **midtown** Development does not directly abut smaller scale residential areas of Bayside. Its immediate neighbors are unbuilt land, an unredeveloped factory/warehouse across Somerset Street and commercial open parking lots with low-rise commercial development on the opposite side of the trail. The Plan for **midtown** Development therefore does not delineate transitions between the larger scale and the smaller scale elements of the Bayside zone. The Plan for **midtown** Development provides several open spaces that provide elegant transitions from the taller to the lower scale elements of the design (The Courtyard, The Mews, Chestnut Square, The Bayside Trail).	**midtown** buildings One, Two, Three, and Four are designed so as not to have a “back”. Blank walls are avoided and service areas are internal to the buildings and utility transformers will be screened from view. The same materials are used on all sides of each building and composed to provide an inviting contemporary appearance. **midtown** design includes The Mews and The Courtyard
Standard A-3	Gateways		*Gateways serve as landmarks signal arrival and promote district identity.* As a landmark, the buildings of **midtown** Development will be visible and identifiable to vehicular traffic. This visibility and identity of place is tempered by addressing the pedestrian scale along the trail and Somerset Street. The Plan for **midtown** Development is unique as the first extensive intervention to create a walkable main street; it will create an identifiable landmark within surrounding neighborhoods and district. This landmark status will be emphasized by distinctive paving patterns, landscaping, accent lighting and way finding at the pedestrian scale.	The **midtown** apartment buildings have been designed in a unique contemporary industrial aesthetic to mark the beginning of this important development in Bayside. No less important at street level, the Garage building will feature a maximum retail frontage on Somerset Street, Chestnut Street and the Bayside Trail, enhancing the pedestrian experience. Upper levels of the garage will be clad in architecturally detailed industrial materials in context with the Apartment buildings.

Standard A-4	Views and Landmarks	☐	*New development shall be designed with consideration of views and view corridors shown on Downtown Height Study and Bayside Height Overlay Map and other important views.* The Plan for **midtown** Development includes important characteristics: · Massing articulation responds to view corridors with heights substantially less than allowed · Myrtle Street and Cedar Street are not through streets to Somerset Street and are presently partially obstructed by existing buildings. · New development does not block view corridors · Roof top appurtenances will be screened from view corridors, and will not obscure important landmarks;	**midtown building** designs respond to the intentions of the Plan for Development by: · Emphasizing in its materiality and techtonic articulation at the corners while de-emphasizing the other façades; · Pearl St. Extension is designed with potential to extend street grid through to Marginal Street · While the Myrtle St. view corridor will be partially blocked at lower levels, The Mews provides a continuity of the pedestrian realm which will be easily visible from the lower blocks of the street; · Mechanical equipment and elevator penthouses will be screened · Buildings meet the agreed 10’ setback distance from street line at ground; portions of the upper levels of **midtownThree** project two feet into this setback (that is portions of the upper levels are set back eight feet). A request for a partial waiver of Standard A-4 that requires that new development be sited so that it does not block existing view corridors, is required to allow the garage **midtownTwo** to partially obstruct the Myrtle Street view corridor.

Standard A-5	Pedestrian Environment	■	*Development shall be human scale on public streets and enhance the pedestrian experience through details of design.* The Plan for **midtown** Development's public streets and public spaces will achieve a human scale at the pedestrian level through the use of: · Ground floor retail throughout; · Articulated retail façades; · High quality building materials; · Retail entries primarily oriented to the street; · Active windows and storefronts; · Awnings and weather protection; · Outdoor seating; · 'Bump outs' traffic calming; · Adequately sized sidewalks; · Appropriately scaled streetlights; · New public spaces and connection to trail; · New urban streetscape, furniture, landscaping and trees; and, · Provision for public art, by others. · Development Plan is seeking a waiver of the future extension of Cedar and Myrtle Streets.	**midtown building designs** respond to the Plan for Development intentions by providing: · Continuous retail frontage along Somerset St. interrupted only by garage and service entries, and along Chestnut St. and for more than half the length of the garage along the trail, and along Elm Street; · Retail façades which will be a majority clear vision glass with column and mullion articulation; · Entries will be from streets exclusively and will be protected with awnings; · Outdoor seating will be provided where space and tenant requirements allow; · Sidewalks are adequately sized and provide bump-outs at pedestrian crossings at Pearl and Chestnut streets; · Streetlights will be standard for the zone; · Connections to the trail are made at Pearl St., the Mews, Elm Street and Chestnut St.; and · New paving, street furniture, landscape planting, and provision for public art will be provided; · Applicant is exploring public art in the form of large scale murals – the building elevations show potential location

Standard A-6	Mix of Uses	■	*New development in Bayside shall incorporate a mix of residential, retail, commercial, and open space uses of various types and scales.* The Plan for **midtown** Development incorporates a mix of residential, ground floor retail and open space uses of various types and scales. The plan is designed to allow adaptability and flexibility of use over time.	The **midtown** buildings incorporate a mix of residential, ground floor retail, and open space uses.
Standard A-7	Building Orientation	■	*Buildings shall be located at the property street line to provide definition and character to the streets.* The **midtown** Development buildings have been located near the property street line in order to provide very clear definition and character to the street. The primary façades and entrances of buildings are oriented to streets, major pedestrian routes, or open spaces in order to enhance the pedestrian-oriented environment.	**midtownOne** apartment building is oriented with continuous retail frontage on Somerset St. and The Mews; the primary apartment entrance is on Pearl St. near the trail and there are secondary entrances on Pearl St. nearer Somerset St. and from the Courtyard; service is confined to a narrow entrance on Pearl St.; tenant amenities and the residential lobby have active windows facing the trail. **midtownTwo** garage building is built out to the street line and features continuous retail development along both Somerset and Chestnut streets. **midtownThree** apartment building is oriented with continuous retail frontage on Somerset St., clerestory windows along the trail, and at the corner of Somerset and Chestnut Streets, the apartment entrance faces Chestnut Street. **midtownFour** apartment building has retail frontage on Elm Street and facing the trail, with the apartment resident and service entries from Elm St. at the southeast corner All buildings thus front on streets at property line and form a strong and active street edge.

Principle B, Access and Circulation			**midtown** Development Plan	**midtown Level III** Design Review
Standard B-1	Streets and Alleys	■	*Streets and alleys shall be scaled for expected vehicle, pedestrian, bicycle and transit activity to support mixed use development.* The Plan for **midtown** Development provides streets scaled for expected vehicle, pedestrian, bicycle, and transit activity; they support mixed use development and will be well landscaped and promote traffic calming. Somerset Street will allow for on-street parking and loading. The proposed street grid of the Plan for **midtown** Development will follow the existing scale and pattern of Portland's street grid and blocks. The plan incorporates provisions for the future extension of Pearl Street to Marginal Street.	**midtownOne, Two, Three, and Four** will include the development of streetscape to meet these standards along Somerset, Elm and Chestnut Streets. The full build-out of Pearl Street will require future property acquisition; the temporary construction of this first phase will provide a turn-around at the trail sufficient for passenger and delivery vehicles The immediate implementation will involve raising the grade of Somerset St. (a B street on the *Bayside Street Hierarchy Map)*, Chestnut St., and Pearl St. (both C streets in the hierarchy). Temporary transition grades will be provided at the corner of Somerset and Pearl, and at the west end of Somerset St. at Elm St.
Standard B-2	Street Connectivity	■	*The prevailing street grid of Portland (and Bayside particularly) should be extended to provide opportunities for sun and airflow.* The Plan for **midtown** Development incorporates provisions for the future extension of Pearl Street. Small block size would make the provision of an efficient parking garage impractical (as the length of ramp is determined by slope limited by code), so the Development Plan is seeking a waiver for the future extension of Cedar and Myrtle Streets.	**midtownOne** apartment and garage building projects are designed to allow a public mews space to provide a pedestrian connection from a future Myrtle St. extension to the Bayside Trail and to allow airflow and sunshine.

				Near Elm Street, the **midtownThree** building is held back from property line to provide a wide and clear public trail connection to future redevelopment of the land to the north (currently fenced parking lots) Sunlight and air are well-provided to all façades of all buildings.
Standard B-3	Mid-Block Permeability	■	*Development should incorporate mid-block permeability perpendicular (and where feasible, parallel) to Marginal Way through provision of alleys, pedestrian corridors, trail access, plazas, and pocket parks.* The Plan for **midtown** Development incorporates provisions for a new public open space connecting Somerset Street to the Bayside Trail between the first apartment and garage buildings.	**midtownOne** apartment buildings and **midtownTwo** Garage building are sized to the smaller block sizes of the Bayside neighborhood. **midtownThree** provides retail space fronting on Somerset St. It is noted that the building opposite this building on Somerset St. has no mid-block connector and the trail adjacent to the building's north façade is defined by a berm containing stabilized contaminated soil which rises 6 feet above the floor level of the retail space. In addition, there is a fenced parking lot on the north side of the trail. A mid-block connector in this instance would serve no real purpose as there would be no matching connector on the other side of Somerset St. and no pedestrian connection to the trail or properties to the north – that is a connector by itself (even if it could overcome the topographic problem of the berm) would generate no foot traffic as it would not be part of a larger pattern of pedestrian movement. The **midtownThree** building design does, however, hold back from the property line at its west end allowing an expanded trail connection to Somerset and Elm Streets with easy and inviting access from Somerset Street.

Standard B-4	Sidewalks and Crosswalks	■	*All sidewalks and crosswalks shall conform to the intent of the City's Technical and Design Standards and Guidelines providing sidewalks of 12 - 15 ft. width on A and B streets with bump-outs at pedestrian crossings.* The Plan for **midtown** Development incorporates new sidewalks which will be bifurcated by a grade change at Pearl and Somerset Streets as shown in the plans. However, with the planned change in roadway elevation the majority of the Somerset frontage will be one continuous sidewalk without grade change. Somerset and Elm are designated 'B Streets' – the plan includes bump-outs and amenities such as tree wells, landscaping, café seating and provision for public art by others.	The **midtown** Apartment and Garage buildings will include development of detailed landscape areas on Pearl, Somerset, Chestnut, and Elm Streets, with new pavement, street furnishing and lighting.
Standard B-5	Green Streets	na		
Standard B-6	Multi-modality	■	*New development shall accommodate a full range of multi-modal transportation options including pedestrian, bicycle, private auto, delivery and pick-up vehicles, and transit users.* **midtown** Development incorporates plans for re-construction of Somerset, Pearl, and Chestnut, streets to meet the City's standards and allow multi-modal use.	
Standard B-7	Continuity of Street Level Uses	■	*Development shall provide for the continuity of pedestrian-oriented uses along Somerset Street frontage.* Unavoidable entrances to the garage of the **midtown** Development are located on Somerset street; pedestrians will be given priority by requiring cars to enter the garage at sidewalk level via a short ramp at curb edge. Service	A service entrance for the **midtownOne** apartment building and its ground floor retail use is provided on Pearl Street; service entrance for **midtownTwo** retail space is provided adjacent to the garage entrance;

			entries to residential buildings **midtownOne** and **midtownFour** are planned at the cross streets to assure maximum retail frontage on Somerset St.; the service entry for **midtownThree** retail and residences will be along Somerset St., and the service entry for **midtownFour** will be near Elm St. A partial waiver is requested	service entrance for **midtownThree** retail and residences is provided on Somerset Street, and the service entrance for **midtownFour** is provided on Elm Street. These service entrance doors will be about seven feet wide, will be designed as an integral part of the modern industrial aesthetic of the buildings, and will be opened only to remove trash and recycling to vehicles parked in designated service spaces. Service for the ground floor retail use in the Garage building will be provided through the front door(s) of the retail spaces from loading zones along Somerset St. Loading dock or service vehicle facilities are not planned for these retail spaces; tenants will provide for trash and recycling facilities within their leased premises. Retail and apartment lobbies will form more than 90% of street frontages thus assuring the maximum frontage along Somerset Street.
Standard B-8	Traffic Calming	■	*New development shall provide traffic calming on Chestnut Street where the Bayside Trail crosses and shall provide neck-downs, trees and landscaping, and crosswalks as wide as the sidewalks they serve.* The Plan for **midtown** Development provides landscape treatment and sidewalk bump-outs (traffic neck-downs) along Somerset street at crosswalks, as well as traffic calming in the form of a central island in Chestnut street where the Bayside Trail crosses.	The intersections of Pearl, Elm and Chestnut Streets with Somerset St. will be constructed to city standards as part of the **midtown** construction work.

Standard B-9	Streetscape Design	■	*New Development shall utilize the City's streetscape standards for Bayside to create a unified image for the neighborhood.* The new privately owned and developed open spaces provided by the Plan for **midtown** Development will be designed to coordinate with the City's standards for streetscape design elements.	The Mews and The Courtyard at **midtownOne and Two** have been designed with paving materials, lighting, street furniture, and plant species that have been coordinated to harmonize with the streetscape standards for Somerset Chestnut and Pearl Streets. The garage green screen is intended to bring the trail landscaping into the garage building façade. Similar materials and details will be employed at the public terraces and plazas associated with **midtownThree** and **Four**
Standard B-10	Encroachments	■	*Encroachments on the public sidewalk shall be sited and designed to encourage pedestrian activity.* No encroachments are planned in the Plan for **midtown** Development.	**midtownOne, Two, Three, and Four** do not include any encroachments in the public sidewalk.
Standard B-11	Lighting	☐	*Street lights along public streets shall comply with the City's Technical and Design Standards and Guidelines and shall be scaled to the size and use typical for each street.* The Plan for **midtown** Development will utilize the standard type fixture for Somerset Street, Elm, Chestnut Street and Pearl Extension. Location and spacing may need a waiver. As well, higher intensity lighting is appropriate for the retail locations especially along Somerset St. and to create a uniform appearance along the ground floor retail areas of the development which may require a waiver of some requirements.	As **midtown** is constructed Holophane street light model for Bayside at 19' – 3" height will be used in Silver Metallic Aluminum on Somerset St. and in Tribo color on Pearl, Elm and Chestnut Streets.

			Pedestrian lighting will be provided by the streetscape lighting noted above together with 'spill' lighting from retail store fronts. Lighting for the mews and new public opens spaces will be designed to compliment these standards. A waiver is requested for higher intensity lighting to support retail activity.	A waiver is requested of the lighting intensity and spacing requirements for **midtown** in that all ground floor uses on Somerset St., the Mews, the Courtyard, much of the Bayside Trail, Chestnut and Elm Streets will be retail. Higher intensity lighting is appropriate for such retail locations and the design seeks to create a bright and uniform appearance along the ground floor retail areas of the development.
Principle C, Parking, Loading and Services Areas			**midtown** Development Plan	**midtown** Level III Design Review
Standard C-1	Parking Structures	■	*Parking structures shall be compatible with adjacent uses and architecture in form, bulk, massing, articulation, and materials.* The Plan for **midtown** Development will incorporate architectural design elements that provide visual interest on all sides of its two garages that are visible from public rights of way. The visual impact of parking garages along Somerset, Chestnut, the Mews and Bayside Trail will be mitigated through façade articulation and use of materials in harmony with the residential buildings. Internal lighting and the glare of headlights will be screened from view. Pedestrian level lighting will be provided on all public sides of the garages.	The **midtownTwo** Parking Garage will express a horizontal bay spacing of 12 ft. similar to the proposed residential façades, and it will utilize a floor-to-floor dimension of 10 ft. similar to the residential floors. Additionally, all buildings will take the form of predominant retail ground floor use with other uses on the upper floors. Materials for the garage will include architectural precast concrete, metal and colored accent features, all as illustrated in elevation drawings submitted. The Garage's internal lighting will be carefully designed to avoid spill and glare visible from public spaces, and pedestrian light levels along Somerset and Chestnut Streets, and along the Bayside Trail and the Mews, will be bright as detailed elsewhere.

			Garages will provide facilities for Electric Vehicle recharging The Garages will provide space for public commercial car share services.	The Garage will provide 14 premium EV-ready spaces near the elevators. These spaces will include an outlet, pay station, and appropriate signage – they will be available on both short term and monthly lease basis. Space will be provided for public car sharing programs like ZipCar, Enterprise, or u-car. These vehicles are provided with access key-cards to operate the garage access and egress gates, so can be parked near the public elevator on Somerset St. and available to all neighbors at any time.
Standard C-2	Parking Entrances	☐	*Parking garage automobile entrances shall respect the pedestrian realm; Pedestrian entry/exit points shall be enhanced; Visual impact shall be minimized through design elements* In the <u>Plan for **midtown** Development,</u> garages will be designed to respect the pedestrian realm and minimize the visual impact of the garage entrance and exit by collocating the garage entrance and exit. These consolidated entry/exits will provide greater uninterrupted active retail use on the ground floor and will require a waiver from the requirement for separate entry/exit. Entry/egress gates will be located interior to the garages to allow entrance queuing internal to the structure minimizing back up onto Somerset St. A waiver is requested of the requirement that entrances and exits be physically separated.	The **midtownTwo** Parking Garage will require entering vehicles to rise onto the sidewalk via a curb ramp, and thus the entering driver will know that the vehicle is being driven in a pedestrian realm. The exit ramp will be clearly signed and well lighted to alert the exiting driver that s/he will be crossing a sidewalk where pedestrians have the right of way. Entry and exit revenue control gates are located well inside the garage. Three lanes are provided with the center lane being reversible so that two entry gates can be utilized during busiest ingress times and two exit gates during the busiest egress times. In this way, the queue of entering vehicles can be maintained within the garage structure.

				By its nature, the queue of exiting vehicles will be within the structure; but important to the pedestrian realm, the exiting driver will have a clear view of the sidewalk and traffic in both directions along Somerset Street, and will remain stopped without blocking the sidewalk until it is safe to exit. Pedestrian access/egress towers at the corners of Somerset and Chestnut, and the Mews at the Bayside Trail will provide a lighted accent at these corners, and provide for public view of patrons in the staircases and waiting for the elevator
Standard C-3	Active Uses	■	*Parking Structures shall incorporate liner buildings, or enclosed active uses on the first floor of A and B streets with a min clear ceiling height of 10 ft. and a minimum depth from street front of 25 ft.* The garages of the Plan for **midtown** Development will exceed this standard substantially by providing active retail uses on the ground floor with a minimum of 14 foot floor to ceiling clearance height and a column spacing that allows deep commercial uses to be developed in the structures.	The **midtownTwo** Parking Garage will feature retail frontage on Somerset and Chestnut Streets and along a substantial length of the Bayside Trail. This retail accommodation is the full 120 ft. depth of the building, accessible on all sides, and built with a clear height from floor to underside of structure of not less than 14 ft. (for more than two thirds of the space – lower ceilings will be necessary under the access ramp)
Standard C-4	Back of Parking Structures	☐	*Parking Structures that have a rear or side elevation along a public right of way or … trail… must incorporate standard E-9.* The garages of the Plan for **midtown** Development will incorporate design considerations of Standard E-9	The **midtownTwo** Parking Garage will not have a “back side” in the traditional sense of a building which utilizes a better material in a more articulated way for a primary façade and lesser materials with no articulation for

				others. Since the parking structure will form a façade on the Bayside Trail, and a street front on both the Mews and Chestnut St., these façades will be as articulated and be built of the same materials as the principle Somerset façade. The design for the parking garage retail façade facing the trail will provide for operable building entrances. The base building will provide clear glass at the retail frontage on the trail.
Standard C-5	Decks and Ramps	☐	*Parking structures shall have horizontal decks on all levels where decks are visible from public rights of way. Sloped ramps shall be screened from visibility from public ways.* The garage decks of the Plan for **midtown** Development will be level on the Chestnut and Somerset St. and the Mews façades, and will incorporate a parking ramp between parking levels along the Bayside Trail façade. The Plan seeks a waiver to allow these ramps to be expressed to the Trail and visible tangentially from streets and public rights of way.	The **midtownTwo** Parking Garage has been designed with ramps at the Bayside Trail façade supported on sloping structure between horizontal end bays. The end bays will be clad in architectural precast concrete with openings similar in size and spacing to the apartment building windows. The sloped structure between these will be minimized, cable rails will provide for pedestrian and auto safety, and the interior structure will be a dark color, all to minimize visibility of the sloping ramps. The façade will be screened on much of its facades above the retail ground floor with a green screen.
Standard C-6	Surface Lots	na	The Plan for **midtown** Development does not incorporate surface parking	

Standard C-7	Bike Racks	■	*Bike Racks shall be provided in a convenient location and in compliance with the City's parking standards at Chapter 14-332.1 et seq.* The Plan for **midtown** Development will incorporate bike racks conveniently located in the parking garages in compliance with the City's Off-street bicycle parking standards, that is 2 bicycle spaces for each 5 dwelling units, and 10 bicycle spaces for the first 100 non-residential car parking spaces and 1 bicycle parking space for each 20 additional car parking spaces.	Assuming 1.0 car parking spaces per dwelling unit and 445 dwelling units provided in the **midtown** apartment buildings, 445 of the Garage's 828 car spaces may be dedicated to residential uses and 383 spaces will be available to non-residential uses. The development will therefor provide the following bike spaces: · Residential use: (445/5)x2 = 178 spaces · Non-residential use: 10 + (142/20) = 29 spaces · Total: 207 bicycle spaces Bicycle spaces are planned at ground level beside and beneath the access ramp accessible from the Courtyard via the pedestrian lobby. Signage will indicate this location from Somerset St. Additional spaces are provided in the ground floor of **midtownFour**. Some of these spaces will be provided and designated for Bicycle Sharing programs such as Zagster, Decobike, or Alta Bicycle Share. These will be located on the Bayside Trail , and will be appropriately signed from Somerset Street.
Standard C-8	Service, Utility and Mechanical Infrastructure	■	*Service, Utility, and Mechanical Infrastructure (when installed at ground level) shall be located at the rear or side of buildings or interior to parking garages, and all such infrastructure shall not result in adverse visual, audible, or noxious impacts.* The Plan for **midtown** Development incorporates screening for infrastructure as follows:	

			· service, utility and mechanical infrastructure will be located at the rear or sides of buildings, with underground connections;	Gas meters for commercial restaurant and café tenants will be mounted in inconspicuous places away from view from streets
			· all service, utility, and mechanical infrastructure will be visually screened;	Utility transformers to serve the **midtownOne and Two** buildings will be located in a corner of the land dedicated to the Bayside Trail; transformers to serve **midtownThree** and **Four** will be located on the proponent's land north of the **midtownFour** building, all as shown on site plan. Transformers will be appropriately fenced for safety and screened with plant materials. No other service equipment is planned at grade level
			· roof equipment will be screened from street level visibility from public rights of way and from designated view corridors by parapets, roof screens or equipment wells; · roof equipment will be clustered to the extent practical;	The design of the **midtownOne** and **Three** buildings will provide roof top screening of condensing units, ventilation fans and other rooftop equipment by extending parapets on street and trail facades above the flat roofs. A penthouse will be provided which will house elevator equipment and stair to roof.
			· residential building loading areas will be through overhead doors, in colors and finish consistent with the exterior elevations of the overall building; · no exposed to view loading docks or ramps are anticipated; and, · no outdoor storage and trash collection or compaction is anticipated that would require screening. · As the buildings have no "sides" or "backs" a waiver is sought of requirement to have service access at side or back and to allow entrance from the public way	Trash and recycling handling and storage at the **midtown** buildings will be entirely inside the buildings.

Principle D, Open Spaces and the Public Realm			**midtown** Development Plan	**midtown** Level III Design Review
Standard D-1	Open Space Design	■	*New publicly-accessible open spaces shall be designed to allow views from the sidewalk, street, and surrounding buildings and shall provide views into the open space as well as outward from within the space.* New public open space meeting these criteria will be provided in the Plan for **midtown** Development	The Mews and the Courtyard of **midtownTwo** and **Three** are visible from Somerset St. and the Bayside Trail and provide views outward to these public rights of way. The open spaces provided adjacent to **midtownThree** and **Four** buildings widen and enhance the trailhead at Elm Street. Importantly, the development of continuous low-rise residential frontage along both Somerset Street and the Bayside Trail provide “eyes-on-the-street” a component of making public spaces feel safe and welcoming at all hours of day and night. All open spaces have been designed with a view to enhance pedestrian comfort while providing a variety of sunny and shaded areas.
Standard D-2	Bayside Trail	□	*Buildings adjacent to the Bayside Trail shall be designed so that the façades along the trail incorporate design elements that enhance the trail use such as active doors into the building, plazas, outdoor seating, and food service.* The Plan for **midtown** Development incorporates provisions to enhance the Trail by incorporating design elements that include: · new/enhanced lighting, hardscape and landscaping;	All the **midtown** buildings are designed façade elements adjacent to the Bayside Trail that enhance the trail experience. As noted above, these façades are not designed as “backs”, and they provide the important

			· active uses/doors into the buildings, · new public spaces; · opportunities for outdoor active uses and seating; and, · new public accesses to the trail from Somerset Street via Pearl Street, the Mews, enhanced Chestnut St., and Elm St. · A partial waiver is sought on the requirement of having “active building ingress and egress” on the portion of **midtownThree** facing the trail due to changes in grade at the berm.	element of residential windows overlooking the trail. Food service establishments are the planned as part of the retail leasing program for the ground floors of the all buildings. This may provide some entrances and egresses facing the trail.
Standard D-3	Landscaping and Street Furniture	□	· *The design shall incorporate provisions for Landscaping and Street Furniture for public and private property that is compatible with the provisions set-forth in the City’s Technical and Design Standards and Guidelines. Submissions shall be reviewed by the City Arborist.*	
			· The Plan for **midtown** Development will incorporate landscape improvements that will enhance the visual quality of the street presence and pedestrian activity zones including enhancement of the Bayside Trail that include urban compatible canopy trees, low maintenance shrub, perennials, grasses and ground cover plantings.	The **midtown** buildings and their site development will be designed to meet all the commitments of the approved Site Plan
			· Plant selection will include native material where practical and appropriate and will include hardy urban material in response to the environmental conditions prevalent to the Bayside area, that include zone hardiness, soil conditions, potential tidal ground water influence, road salt conditions, low maintenance and drought tolerance	Plant selection includes native species where feasible and zone hardy, drought tolerant species. Proposed site grading and planting methods have been incorporated to address environmental constraints as best as possible

			· Currently there is no plant palate for urban street trees in the project area, placement of street trees follow the recommendations of the Technical and Design Standards and Guidelines; planters will be incorporated where grading requirements have provided the opportunity to enhance the public activity zone and incorporate trees typical of other city streets; the new planting will establish a palate for subsequent street improvements by others. · Street planting will incorporate the city standard tree grate within the public sidewalk and along portions of the trail; this enhancement will provide for extended pedestrian circulation; planters will be raised to address the grade changes that occur in response to street improvements and will be detailed to provide visual enhancement; planted areas, including street tree plantings, will incorporate methods to provide for adequate water and air to support a healthy growing condition, and will include alternative soil mixture and or structural units to enhance root zone development; plant material will be selected in response to urban conditions that include drought tolerance · No irrigation system is proposed: however, during the period of establishment watering will be incorporated as part of the required maintenance plan. Drainage is not anticipated to be an issue with the proposed plantings · No accent lighting is being proposed for plantings in the public space or private space.	Selection of street tree species has been coordinated with the City Arborist. Street trees are proposed to be planted in oversized raised-curbed planting beds per request of the City Arborist.

			· A maintenance plan will be provided that will establish a program for feeding, watering, pruning, damage repair, pest and weed control, and replacement of declining plant material.	
Standard D-4	Pedestrian Amenities	□	*Pedestrian amenities shall comply with the City's Technical and Design Standards and Guidelines at a minimum, and also with the streetscape standards selected for Bayside.* · Seating will be provided where appropriate in response to the provisions requiring one linear foot of seating for each 30 feet of street frontage; · Space has been allocated for a bus shelter within the <u>Plan for **midtown** Development</u>; · Trash receptacles and bicycle hitches will be located to maintain an unobstructed pedestrian route; at this time there are no plans to provide for mail boxes or newspaper boxes; · Following completion of the City's *Way finding Study* directional signage in compliance with the study's recommendations will be incorporated into the <u>Plan for **midtown** Development</u>, however pending completion of the study, the proponent requests a waiver of this provision; other signage shall conform with guidelines set-forth in Standard E-16,	Permanent seating will be provided along Somerset St., Chestnut Street, Elm Street and the Pearl Street extension; Additional loose seating will be provided controlled by the retailer at the Courtyard. Bicycle hitches will be provided along Somerset street, Chestnut Street, Elm Street and the Pearl Street extension; for patrons of the retail merchants and undercover at the **midtown Two** garage for visitors to the apartment tenants. Secure bicycle storage for employees of retailers and apartment tenants is provided in the garage (see Standard C-7 above) At a minimum **midtown** will provide street name signs at all intersections, and Bayside Neighborhood maps will be located at the Courtyard, at Chestnut Street, and along the Bayside Trail opposite the Garage building.

Standard D-5	Public Art and other special features	■	*Public Art shall be designed and implemented in accordance with the Guidelines for the City of Portland Public Art Program, shall complement the character of surrounding buildings, streets, and open spaces, and shall not obstruct pedestrian circulation.* The Plan for **midtown** Development will incorporate this requirement and identify locations for public art by others.	The **midtown** development incorporates locations for provision of public art in several locations: sculpture space in the courtyard, potential for Mural development on the Garage façades facing the Mews and the Bayside Trail, in the Chestnut Street Island and at the space to the west of **midtownThree** along Elm St. It is anticipated that the public art will be designed and implemented by others in a manner that will complement the character of the buildings, streets and open space. The proponent will actively solicit appropriate public art as the project nears completion.
Principle E, Architectural Design			**midtown** Development Plan	**midtown** Level III Design Review
Standard E-1	Architectural Design	■	*New development shall create a mixed-use, pedestrian-friendly setting that contributes to the neighborhood context of the surrounding urban fabric, contributes positively to a new identity for Bayside, and provides a sensitive transition to the adjacent residential community.* As noted above the Plan for **midtown** Development incorporates mixed residential and retail uses forming one side of what will eventually become a pedestrian oriented retail street linking Trader Joe's to Whole Foods. The residential density associated with this plan will assure success of the retail development, bring active life to the streets evenings and weekends, and provide added variety to residential offerings by providing for a contemporary urban lifestyle.	

			Architectural design of all buildings will be “modern industrial” incorporating twentieth and twenty-first century materials and sensibilities derived from industrialized production and building techniques. The building designs are intended to be both of their time and timeless – to bridge the century from the neighborhood’s railroad/industrial past to its mixed residential future.	The buildings of **midtown** are unambiguously modern buildings with an economy of expressive means using unadorned industrial materials to achieve great effect through judicious use of accent colors. These buildings, while be designed with a modern architectural vocabulary, and reflect their obligation to be ‘citizens of their own time and place.’ They are designed to be good neighbors, deferring to local vernacular architecture and, where appropriate, borrowing and taking fundamental design lessons in form, proportion, and fenestration rhythms.
Standard E-2	Height	■	*Building heights shall meet those approved in the Bayside Height Overlay Map as amended by any later regulations. Street wall heights shall be stepped back 15 feet above 4 stories. Roofline shall create visual interest on the skyline.* The buildings of **midtown** Development Plan will conform to the heights noted on the Bayside Height Overlay Map of 4/09/2006 (105 and 125 feet). The street wall on Somerset Street will be characterized by façades creating visual interest at the skyline. *“Average Grade at Building Façade”* is less critical to establishing the heights of these buildings because they are substantially lower than the heights allowed by the Height Overlay map. The intention of the development is to allow entrance at virtually any point along the perimeter (that is, along Somerset St., the Mews, the Courtyard, Pearl St., the Bayside Trail, Chestnut St., and Elm St.) the majority of these street and trail frontages will be reconstructed to meet the first floor elevation.	The buildings of **midtown** follow the development plan intentions directly. Both the apartment buildings and the garage will be articulated with vertical elements which will terminate at the roofline to provide interest at the skyline. The low-rise buildings (**midtownOne, Three, and Four**) will not have upper level façade setbacks, however the façade of **midtownThree** will be varied through bays set two feet proud of the main façade, and upper level setbacks and varied parapet heights to create a visually interesting skyline. The **midtownTwo** garage building will not feature setbacks.

			The first floor will be constructed at a finished elevation (called 0’-0” on the elevations, and equal to 12.0 ft. Portland City Base-NGVD 29) which will be above the predicted FEMA flood elevation at 10.0 ft. At two points, however, due to the slope down from new grades of Pearl Street, and Somerset Street south of Pearl, to the existing grades of Somerset Street north of Pearl and the Bayside Trail, and similar conditions at the intersection of Somerset and Elm Streets, sloped grades have been introduced at the building face. This would cause the average grade as defined above to be a few inches lower than 12’-0” for buildings One and Four – but as noted, the buildings are substantially lower than the allowed height and this minor variation is of no consequence. And at some time in the future as all of lower Bayside is lifted above flood levels, the two intersections noted above will be brought up to match the raised portion of Somerset St. and the average grade at the buildings will be approximately 12.0 ft.	
Standard E-3	Massing	☐	*The composition of proposed building façades shall be defined by horizontal and vertical articulation with the vertical predominating; large expanses of undifferentiated uniform cladding are not allowed along public rights of way.*	

			The residential buildings within the Plan for **midtown** Development along Somerset Street will feature a prominent, transparent, brightly lit retail use at ground level and cornice and parapet articulation at the roof line. Collectively these use differentiations, setbacks, and roofline articulations will support a reading of the massing as to having a base, middle and top.	The **midtown** buildings are characterized by not having "backs" – that is they will be seen equally from all directions. As such, careful attention has been paid to the composition of each façade to minimize or eliminate undifferentiated expanses of façade and to provide a degree of articulation in all façades. The organization of residential scale windows is presented in multiple ways. The garage design supports a reading of the massing as to having a base (retail development) and top (through articulation of cornice elements). A waiver is sought for the garage to accept this definition. At the pedestrian level, the garage is characterized as not having a back. The rhythm of retail use and its storefront will create a sense of vitality facing the Bayside Trail. The garage upper levels will be minimally articulated, including green screening, but using the logic of its structural system to express its quiet honesty in the use of architectural precast concrete.
Standard E-4	Articulation	☐	*Façades visible from public rights of way shall incorporate design elements that break the façades into components scaled to the pedestrian, and shall not be blank, flat, unadorned, or repetitive.* Per Standards E-2 and E-3 above the building massing of the **midtown** Development will break down the scale into base, middle, and top by articulation of window detailing, wall color and material, and changes in pattern and texture. Reveals, expansion joints, trim and permanent artwork by others will contribute as well.	As designed, none of the façades of the **midtown** buildings can be characterized as "blank, flat, unadorned, or repetitive."

			The base of the buildings will be commercial retail use and will exhibit materials durable in nature and of high quality. Storefronts and weather protection for pedestrians will further accentuate these façades and reinforce the pedestrian scale. Transparent display windows will be used at the retail façades at the pedestrian level. Effort will be made to encourage retailers to maintain transparency inside the glass.	
Standard E-5	Flexibility of Interior Layout	■	*The first 40 feet of depth of floor area along street frontages shall be laid out to accommodate retail uses. Placement of permanent building elements at the ground level shall be designed to accommodate the broadest possible variety of layouts.* The Plan for **midtown** Development anticipates buildings that will have tall largely open retail spaces facing all public streets and the Bayside Trail. Access to upper levels (residential service, elevator, and lobby spaces, and garage entrance/exit gates and ramps) will be concentrated or clustered to provide the maximum of open leasable space within. Egress stairs from upper levels will be driven to non-storefront façades to the extent feasible.	**midtown** offers commercial interior layouts that are flexible and oriented to the sidewalk, mews courtyard, and trail. The residential buildings provide a retail storefront rhythm allowing retailers a flexible module to merchandise their frontage. The garage has a structural bay spacing of 24 feet by 60 feet making it a unique high quality offering for commercial tenants. The vertical floor to floor dimension of the first floor of all buildings will 18 feet, a dimension matching and exceeding commercial market expectations.

Standard E-6	Entrances	■	*Buildings along public streets shall have their primary entrances oriented to the street.* Primary public entrances to the buildings proposed in the Plan for **midtown** Development will be on Somerset, Pearl, Chestnut, and Elm Streets. A second entrance to the garage will be located nearer the Bayside Trail open spaces.	The primary resident entrance to the **midtownOne** apartment building will be along the extension of Pearl Street, undercover, near the intersection of the Bayside Trail. A secondary key access entry will be located nearer to Somerset St. for resident convenience. The primary resident entrance to the **midtownThree** apartment building will be along Chestnut Street and the resident entry to the **midtownFour** apartment building will be along Elm Street. The primary public egress from and access back to the parking levels of the **midtownTwo** parking garage will be at the corner of Chestnut and Somerset Streets. A secondary entrance to the garage will be located at the Courtyard along the trail.
Standard E-7	Windows	■	*Windows appropriate to the overall building style and scaled to overall massing shall be located on all façades visible from public rights of way. First floor visible light transmittance shall not be less than 0.7 and vision glass shall occupy at least 50% of the street frontage from 2 to 9 feet above the sidewalk. Upper floor windows shall likewise transmit at least 0.7 of visible light, and shall constitute 15 to 40 percent of façade surface area.* The retail frontage of all buildings in the **midtown** Development will comply with this requirement. The upper levels of the residential buildings will similarly comply. The garages will not have windows, but will be articulated with a window-like pattern of openings and screening designed to compliment the adjacent residential buildings.	The **midtown** apartment buildings have windows located on all façades with a ratio of 35% vision glass area. The retail frontage of the buildings between 2 and 9 feet above the floor is 80% vision glass. All vision glass facing public ways and the trail will be clear un-tinted non-reflective low-e coated insulating glass units with a visible light transmittance of over 70%

Standard E-8	Storefronts	■	*Storefronts shall be designed to accommodate doors at regular intervals to allow for flexibility over time.* The retail storefronts of the buildings in the **midtown** Development will have regularly spaced access door panels at each side of the columns along public streets.	As discussed in a previous application for this building site the **midtownOne** building may have overhead glass doors along Somerset Street, the Mews, and the Courtyard to allow the space to open up when feasible in good weather. Regular side hinged doors will be provided beside each overhead door to allow access and egress when the larger doors are closed. As the leasing plan is finalized, some bays of the storefront may need to be either fixed glass, or opaque material to suit the needs of the retailers. The applicant must retain the greatest practical flexibility to assure successful leasing of the retail space. Therefore, final details of storefronts in all four buildings are subject to the needs of retailers. Certain areas may be fixed glass others may feature roll-up doors, some areas may need to be opaque -- but the street fronts will feature wide clear storefront glazing and regularly spaced doorways to the greatest extent allowed by practical leasing considerations. Those areas of fixed glass and opaque areas will exhibit the same layout pattern as the mullions of the of the other storefronts.
Standard E-9	Back Sides of Buildings	☐	*The back sides of buildings … along the trail shall incorporate high quality materials, transparency, operable building entrances, and other design features consistent with the primary façades.* As noted elsewhere, the buildings constituting the **midtown** Development do not have "back sides" in the traditional sense; all sides of all buildings will be formed of the same palette of high quality materials incorporating a similar range of details and style.	**midtown** is characterized as a design without a back. Elevations not facing the street or other public ways or trail are designed to the same high quality standards as those facing streets. Utility meters, exhaust vents and other mechanical appurtenances will be screened from view to the extent practical within the constraints imposed by utility companies.

			A partial waiver is sought on the requirement of having "operable building entrances" on the back portion of the **midtownThree** due to natural changes in grade and safety concerns.	
Standard E-10	Rooftop Appurtenances	■	*Rooftop appurtenances shall not be visible along or block view corridors or views to specific landmarks.* Mechanical and other equipment on the residential building roofs in the **midtown** Development will be screened from view. Screens will be formed of the same palette of materials forming the primary façades of the buildings. Garage rooftop decks will be used for parking and will generally have no roof top appurtenances.	The roof top screen material for the three **midtown** apartment buildings follows the design logic of each building as a whole with the goal of presenting the "top" of the building as a unified design. The exterior appearance, scale, shape and material choice conforms and is consistent with the rest of the building.
Standard E-11	Fences and Walls	■	*Fences and walls along public ways shall be designed of high quality materials appropriate for the locations in which they are shown. Chain-link fences, plastic fences or fences rural in character are not allowed.* No fences are planned in the **midtown** Development area. Walls at changes of grade at the public areas will be of durable masonry materials. The required fence at the north side of the raised trail will not be chain link	Walls at changes of grade at the public areas of **midtown** will be of durable masonry materials.
Standard E-12	Materials	☐	*Façades visible from public rights of way shall consist of natural and authentic building materials that are expected to last 50 years.* The buildings in the **midtown** Development will be clad in precast concrete, EFIS, vinyl or other siding materials, corrugated metal siding, with vinyl residential windows and enameled aluminum and glass storefront window and louver systems. All materials will be chosen for durability and long service life.	The four buildings of **midtown** are decidedly modern, expressive of the aspirations and ambitions of today's urban citizen. The material choices are important, and sustain a cohesive, integrated image of the buildings while providing intrinsic differences between each.

			A waiver is being sought of Standard E-12 for the use of EFIS and vinyl or cement composite siding panels. Building material technology has evolved in recent years with offerings of higher strengths, color and pattern choices, and the ability to vary forms within a façade composition. These materials can have a handsome, elegant appearance when assembled in architecturally considered designs. Additionally the performance of these materials is very well understood and their use rivals the age and performance of heavier exterior materials like masonry or concrete.	The **midtown** apartment buildings have been designed using high quality, durable materials that age and perform well and that are appropriate for buildings of this low-rise scale. The **midtownTwo** garage building has been designed to be built of precast concrete structural and architectural cladding elements with detailing and accents in architectural metals consistent with the materials used elsewhere in the development and in the district.
Standard E-13	Transparency	■	*Windows shall use untinted or lightly tinted glass.* The buildings in the **midtown** Development will use clear vision glass with high visible light transmittance for windows facing the street, trail, and other public ways.	As noted in standard E-7, the **midtown** apartment buildings will comply in that all windows facing public ways will be clear glass. The **midtownTwo** garage building has windows only in the retail storefront. These will also be clear glass. However, there are areas of storefront, particularly where the garage ramp rises along the Bayside Trail façade, in which opaque spandrel glass will be employed to hide the sloped structure behind while maintaining the orthogonal fenestration pattern.
Standard E-14	Illumination	■	*Prominent façades shall be lit by carefully designed downwash systems consistent with the City's Revised Lighting Standards for Architectural Up-lighting and Standard B-12* The Plan for **midtown** Development may incorporate carefully designed façade lighting of appropriate color and intensity consistent with garage and residential buildings.	Architectural façade lighting at **midtown** will be confined to the garage façades, the retail façades, and the public art offerings.

Standard E-15	Weather Protection	■	*Pedestrian sidewalks and walkways shall include weather protection at entrances appropriate for retail environment use.* The Plan for **midtown** Development will provide awnings along retail frontages and entrances on Somerset, Chestnut, Pearl, and Elm Streets.	The Somerset Street frontage of the **midtownOne, Two and Three** buildings will have awnings at the storefronts to provide weather protection. The apartment entrances on Pearl, Chestnut, and Elm Streets will be provided with modest glass and aluminum canopies for protection. As there will be no doors to the open stairways, the garage auto entries will have small glass and aluminum canopies more to mark the entry point on the façade and support signage than to provide weather protection.
Standard E-16	Signage	■	*Signage should be related to and an integral part of the design of a building, composed of new materials; lighting techniques, and graphic images shall be allowed where it will not have a detrimental effect on the pedestrian environment and character of surrounding buildings.* The Final Level III Site Plan for the **midtown** Development contains a signage plan submitted with the site plan approval package. Signage on buildings will be related to and be an integral part of the design they are part of.	The apartment Buildings and the garage of **midtown** will have building-integrated sign features incorporating graphics, color, and subtle lighting. A Sign Plan is being submitted showing and describing the location of building identity and address signs, and tenant signage. Limits on number and size of individual signs and total area per façade will be noted.
Standard E-17	Historic Buildings	na		

Standard E-18	Sustainable Design	■	*Property that is conveyed by the City shall be developed in a manner that is certifiable according to the current relevant standards for building and neighborhood development of the USGBC's LEED program.* The **midtown** Development will consist of buildings designed to meet LEED-NC or LEED-C&S requirements. These buildings, if registered, supervised, inspected, and administered correctly, and if built according to design, would be able to achieve certification.	A LEED checklist is provided for each **midtown** apartment building and the shell retail space of the parking garage showing how each would be able to earn the necessary prerequisites and credits to achieve Certification. See Exhibit 25.
Standard E-19	Shadows	☐	*New development shall not increase the area of the Bayside trail in shadow by more than ten percent during the period from March 21 to September 21* The B-7 Zone is exempt from the requirements of Section 11 of the city's technical manual.	An analysis showing the shadows at 9:00, 12:00 and 3:00 on the solstices and equinoxes has been prepared for **midtown** to show the extent and duration of shadows on the Bayside Trail and indicate the shadow in each instance which is in excess of a building 65 ft. tall built at the property line. This analysis provides commentary on any change to the usefulness of the Trail as a result of the new shade. As noon on the solstices appears to be the time at which the greatest added shadow falls on the trail, this time was chosen to analyze the numerical extent of that added shadow. Area measurements for this time period show less than 5% increase of shadow on the trail and other public spaces beyond the shadow of 65 ft. tall buildings will result from the construction of the **midtown** buildings.

Standard E-20	Wind	■	*Consideration of wind impact relating to new construction shall establish and maintain a comfortable pedestrian environment.* As the buildings are all substantially lower than the limits of height prescribed for the project area, and are consistent with the height of other recent developments in the district that have not experienced uncomfortable winds, the proponent seeks clarification that a detailed professional wind study will not be required for Final Level III Site Plan review	Initial assessment of wind roses and anecdotal reports suggest that winter winds from the North and Northwest might cause probable discomfort for sitting activities in the Courtyard if **midtownOne** were built to 165 feet tall. The building is proposed at 72 feet however, and accordingly any effects of wind would be attenuated substantially Summer winds from the South will be tempered by topography and existing construction south of the project site. The tendency for the south wind to concentrate in the Mews will be mitigated by the openness of the garage. Other uncomfortable winds previously predicted for walking at the Elm St. end of the trail, predicated on a pair of 165 ft. high buildings, would be similarly attenuated in the proponent's current proposal to build **midtownThree** and **midtownFour** as substantially lower 72 ft. high buildings. It is highly improbable that pedestrians on the trail, Elm St., or Somerset St. in this vicinity would experience any discomfort due to wind while sitting, walking, or jogging. As no dangerous wind conditions were found for any spaces with the taller buildings, so no dangerous wind conditions will result from the substantially shorter buildings.

SHADOW STUDY

Shadow Study

for

Midtown I Phase One

14 November 2014

Methodology

The shadow regulations do not require a study for buildings 65 ft or less in height. For taller buildings, the regulations require illustration of shadows at 9:00 am 12:00 noon and 3:00 pm local time on the solstices and the equinoxes. We obtained solar azimuth and elevation for these times and dates for the exact location of the site and used these angles to project shadows of the building masses proposed. Buildings had rooftop penthouses and parapet screening included.

We projected shadows first for 65 ft tall masses built to the property line on all sites. We then projected shadows for the proposed buildings and superimposed these. The darker shade is that caused by the 65 ft building height and the lighter shade is the additional shade caused by the proposed buildings.

The proposed buildings will be 78 and 92 feet in height. The shadows cast by these buildings have been compared to the shadows that would be cast by 65ft tall buildings built to the property lines.

Shadow on the trail and other public spaces added by this additional height changes throughout the day and with the seasons, but is generally minimal. We have taken the case of noon on the equinoxes which appears to represent a more extreme example of added shadow on the Bayside Trail – during the winter all shadows are long, and the increment of new shadow is beyond the public spaces; during the summer, shadows are very short and the increment is substantially diminished..

For this example we have measured the area of net new shadow on the trail and other public spaces from the proposed buildings and compared it to the area of shadow cast by buildings 65 ft. tall. The net new shadow is less than 1%, well within the standard's 10% limit.

Shadow description

On the March morning (1) the trail will be in the shadow of the 65 ft building. Additional shadow will project onto the parking lots of the existing buildings on Marginal Way. At noon (2) much of the trail will still be in shade, but the taller building shadows are much reduced in scope. By afternoon (3) the trail will be mostly in sunlight.

On the June morning (4) some of the west end of the trail will be in sunlight, and shadows are substantially smaller than spring or fall. At noon (5) shadows are minimal and much of the trail is in sunlight. At 3:00 and through the evening (6) the trail will be in sunlight except for a small part at the west end shaded by midtownFour until about 4:30.

On the September equinox, the shadows are essentially the same as in the spring since both days are daylight savings time (7, 8, 9)

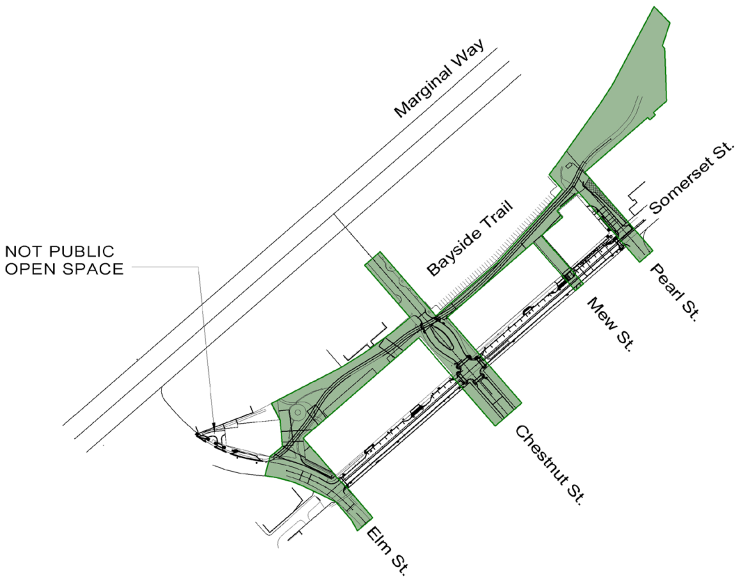
On the December day, Winter Solstice, at 9:00 am the shadow (10) of even the 65 ft building at midtownFour will reach to Marginal Way, and the other lower shadows will reach well across the parking lots. The increment of additional shadow for the proposed buildings is contained within the parking areas. At noon (11) with the sun to the south, even the 65 ft buildings would completely shade the trail except for the open slot at the east end near Elm St. At 3:00 pm (12) the trail would be partially shaded by the 65 ft buildings, and there would be so little incremental shadow from the proposed buildings that it is hard to spot on the diagram. As the sun moves west to sundown, this shadow will grow to shade the entire trail in the project site.

Conclusions

There would be morning shade on the trail caused by 65 ft high buildings virtually any day of the year. During the late fall and winter months the proposed buildings do not add significantly to shade on the trail. During the summer, all shadows are substantially shorter and the trail will receive direct sunlight from mid-morning onward. These shadows on the trail do not require a waiver from the city's requirements.

Additionally, the trail will always be well-lighted because it is open to virtually the entire northwestern sky which provides a great deal of very bright light, even to the ground shaded from direct sunlight.

Also please note that for all twelve times illustrated Somerset St is in virtually full sunlight.



PUBLICLY ACCESSIBLE OPEN SPACE

Calculation Example at Noon on Equinox

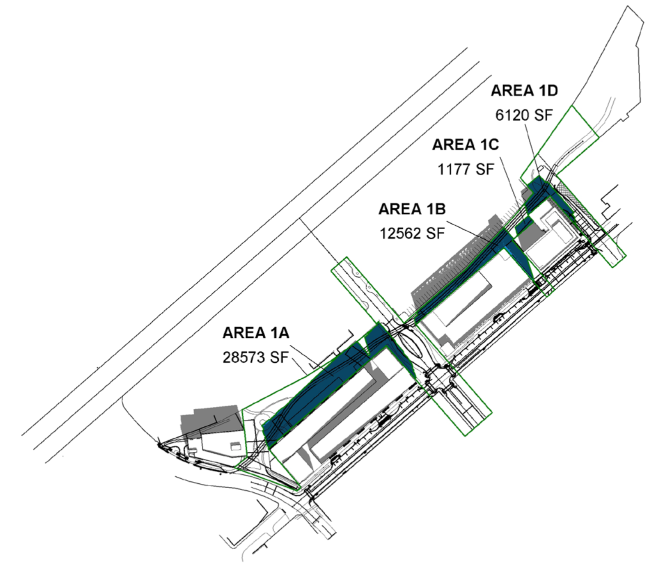
SUM OF AREAS 1A, 1B, 1C, 1D = 48,432 SF

SUM OF AREAS 2A, 2B, 2C = 48,369 SF

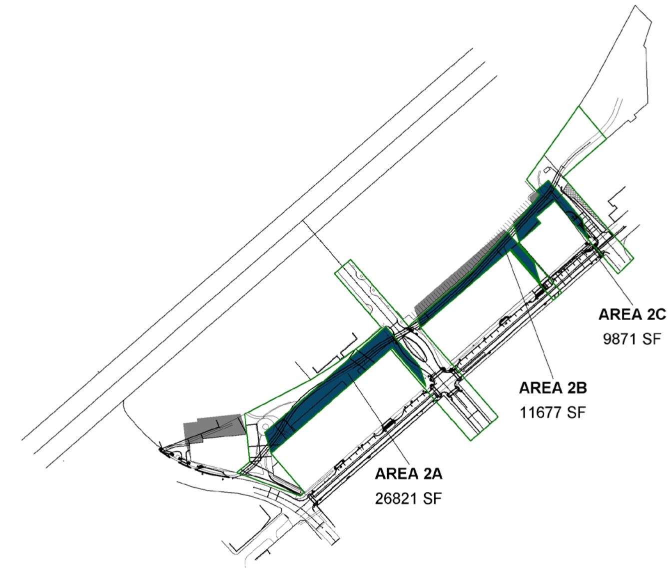
48,432 SF - 48, 369 SF = 63 SF

63 SF = **.13%** of 48,369 SF

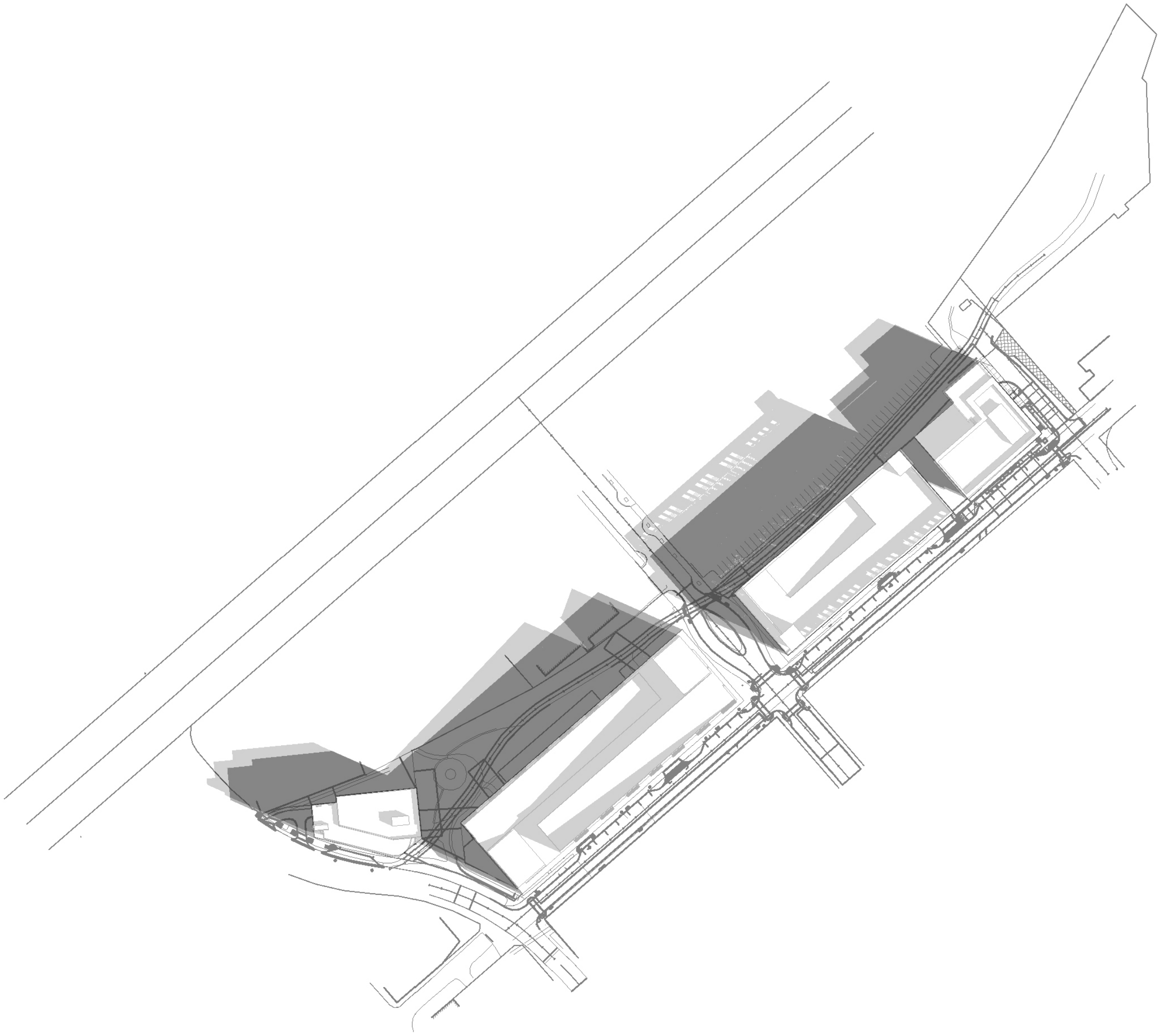
SIGNIFICANTLY LESS THAN A 10% INCREASE



STUDY OF AREAS IN SHADOW IN PUBLICLY ACCESSIBLE OPEN SPACE
FOR BUILDINGS WITH 72' - 92' BUILDING HEIGHTS



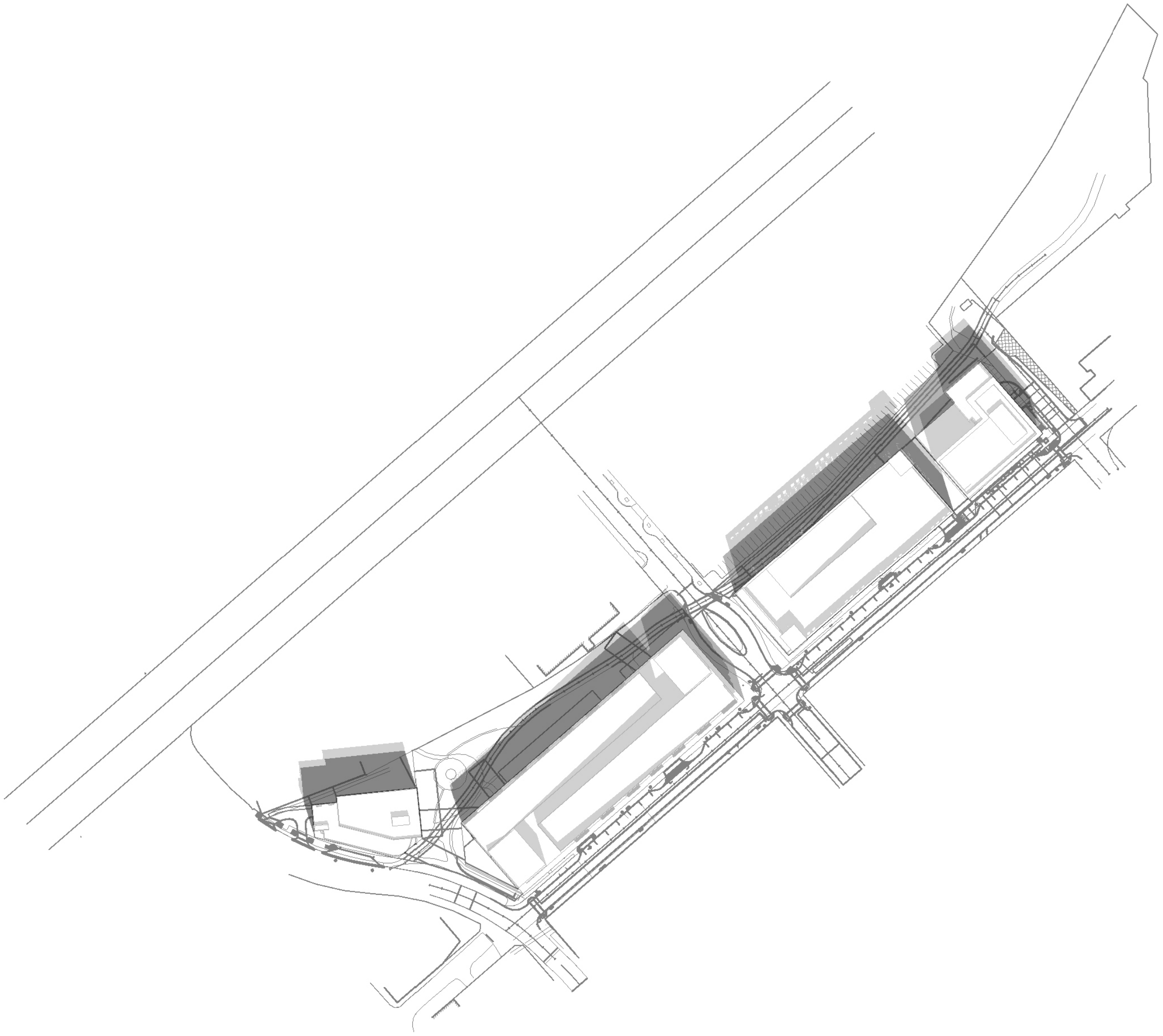
STUDY OF AREAS IN SHADOW IN PUBLICLY ACCESSIBLE OPEN SPACE
FOR BUILDINGS WITH 65' BUILDING HEIGHTS



1 NET NEW SHADOW - 21 MAR 9 AM

1 : 3000

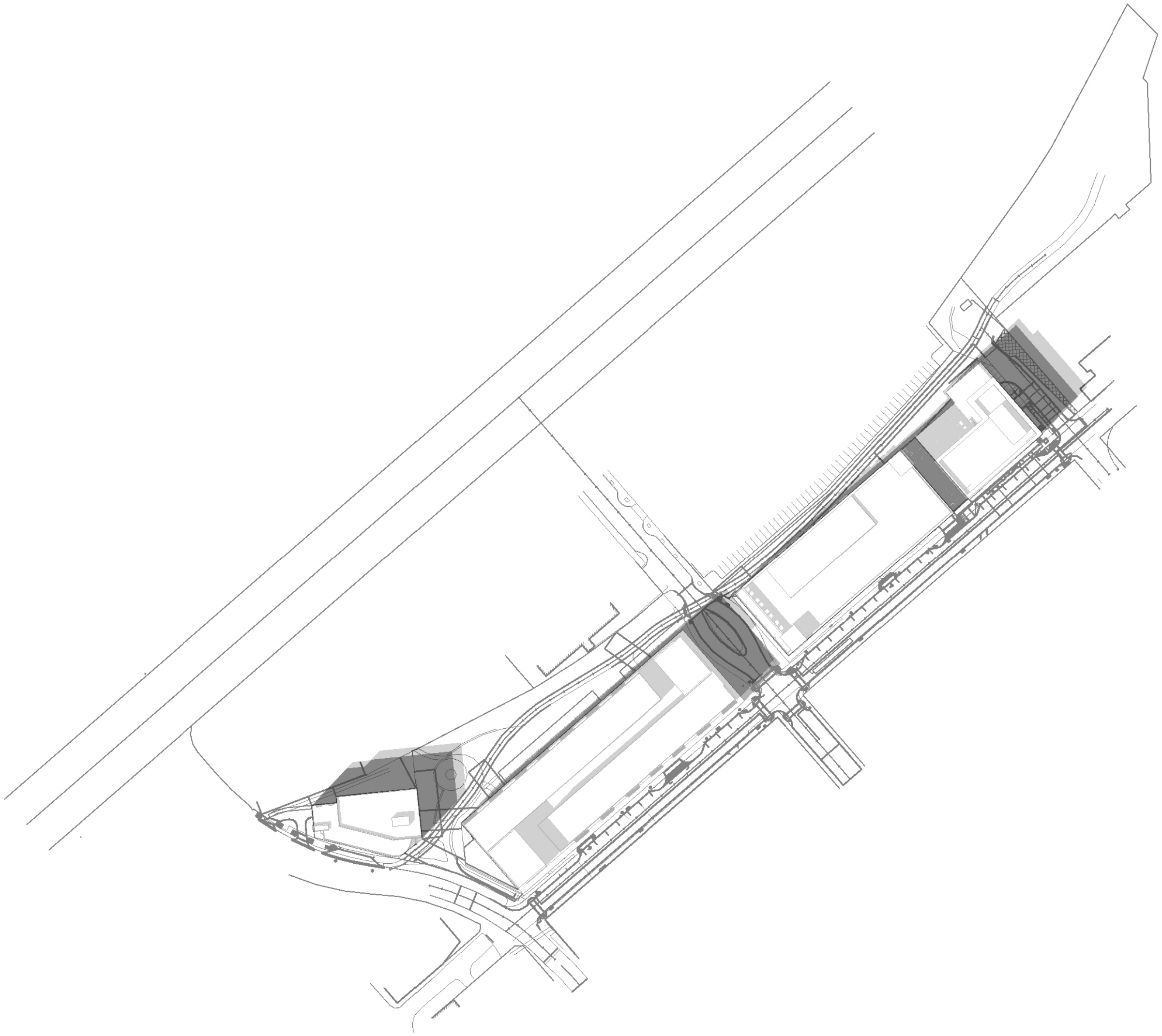
VERNAL EQUINOX



2 NET NEW SHADOW - 21 MAR 12 PM

1 : 3000

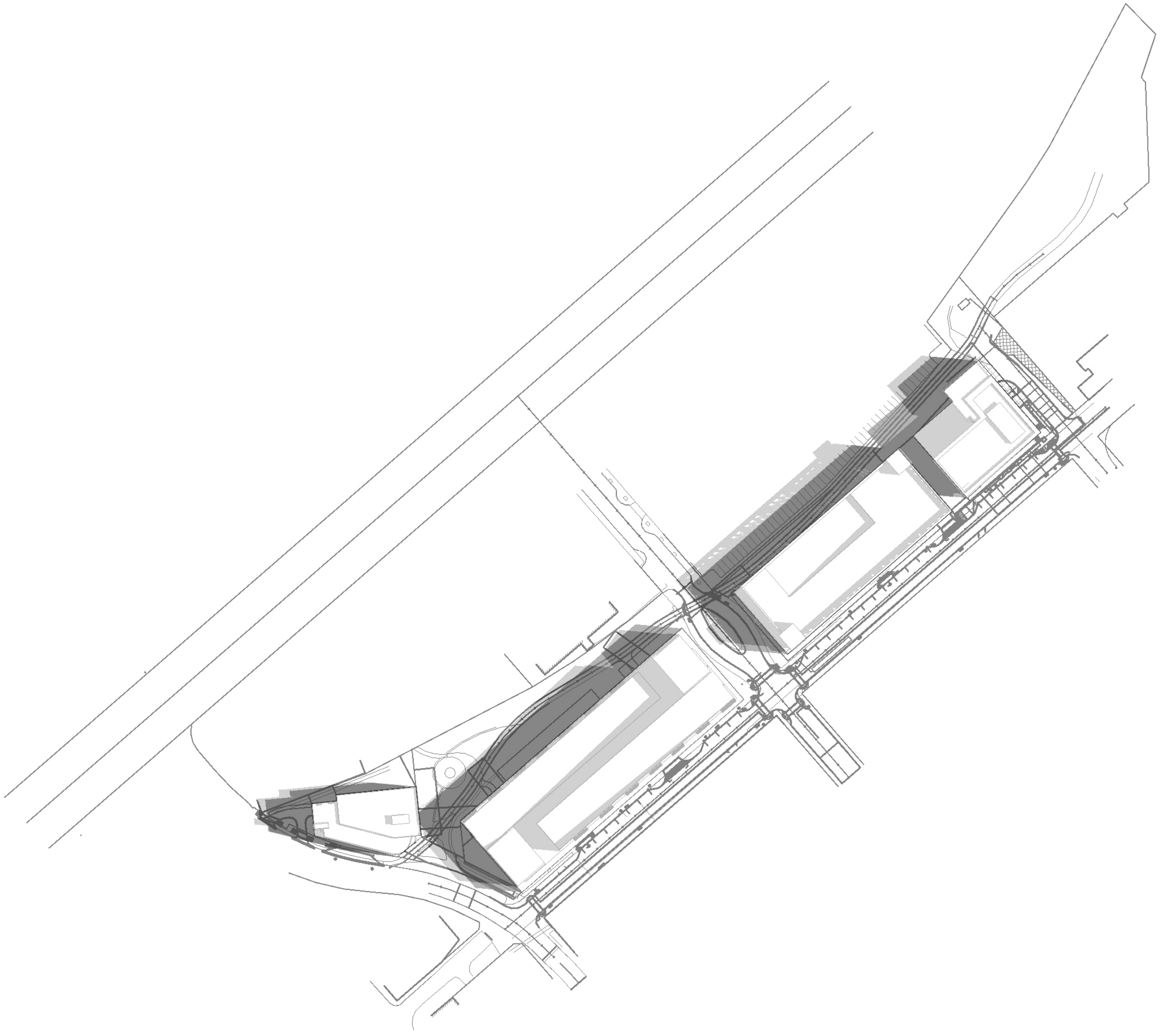
VERNAL EQUINOX



3 NET NEW SHADOW - 21 MAR 3 PM

1 : 3000

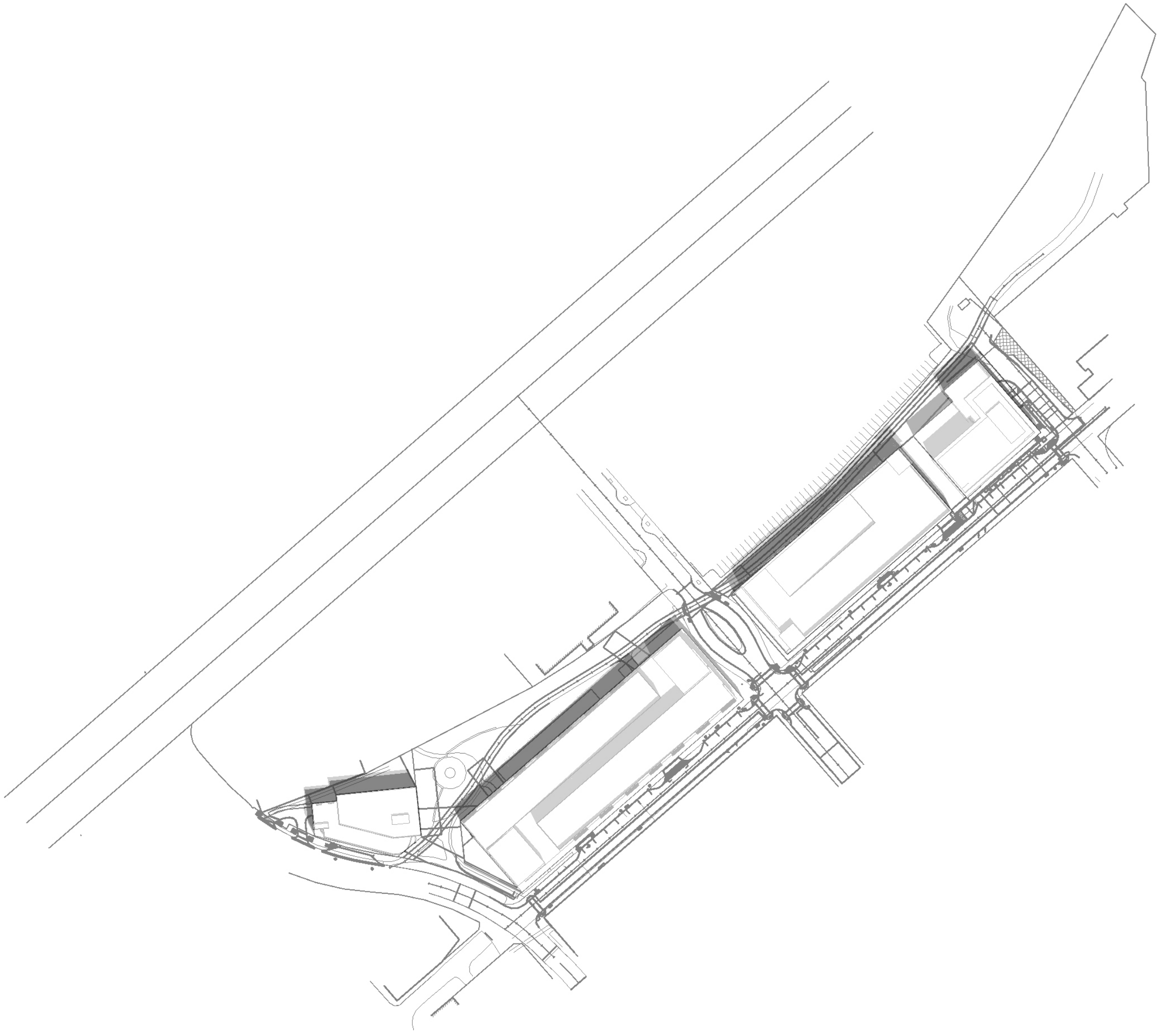
VERNAL EQUINOX



4 NET NEW SHADOW - 21 JUN 9 AM

1 : 3000

SUMMER SOLSTICE

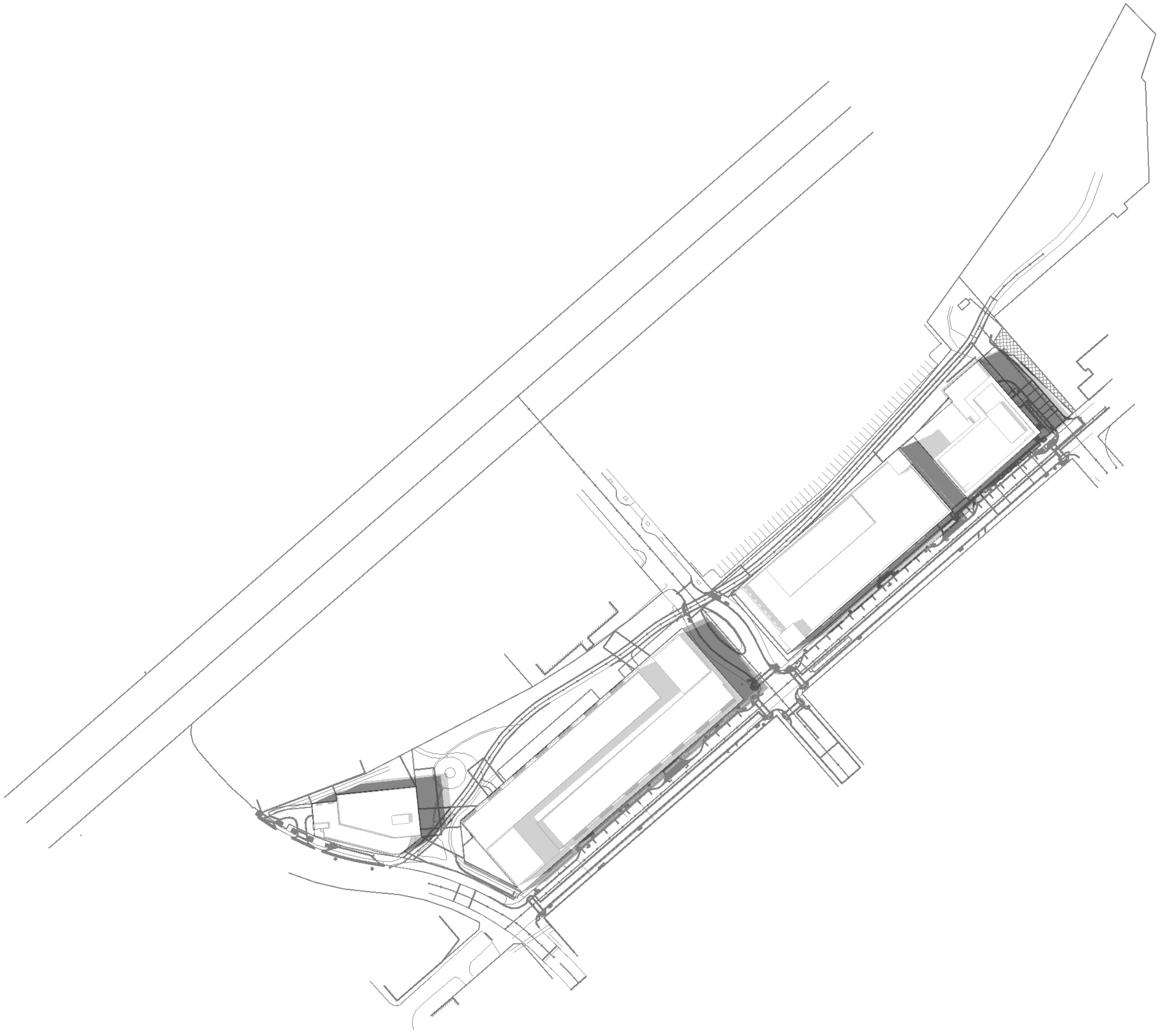


5

NET NEW SHADOW - 21 JUN 12 PM

1 : 3000

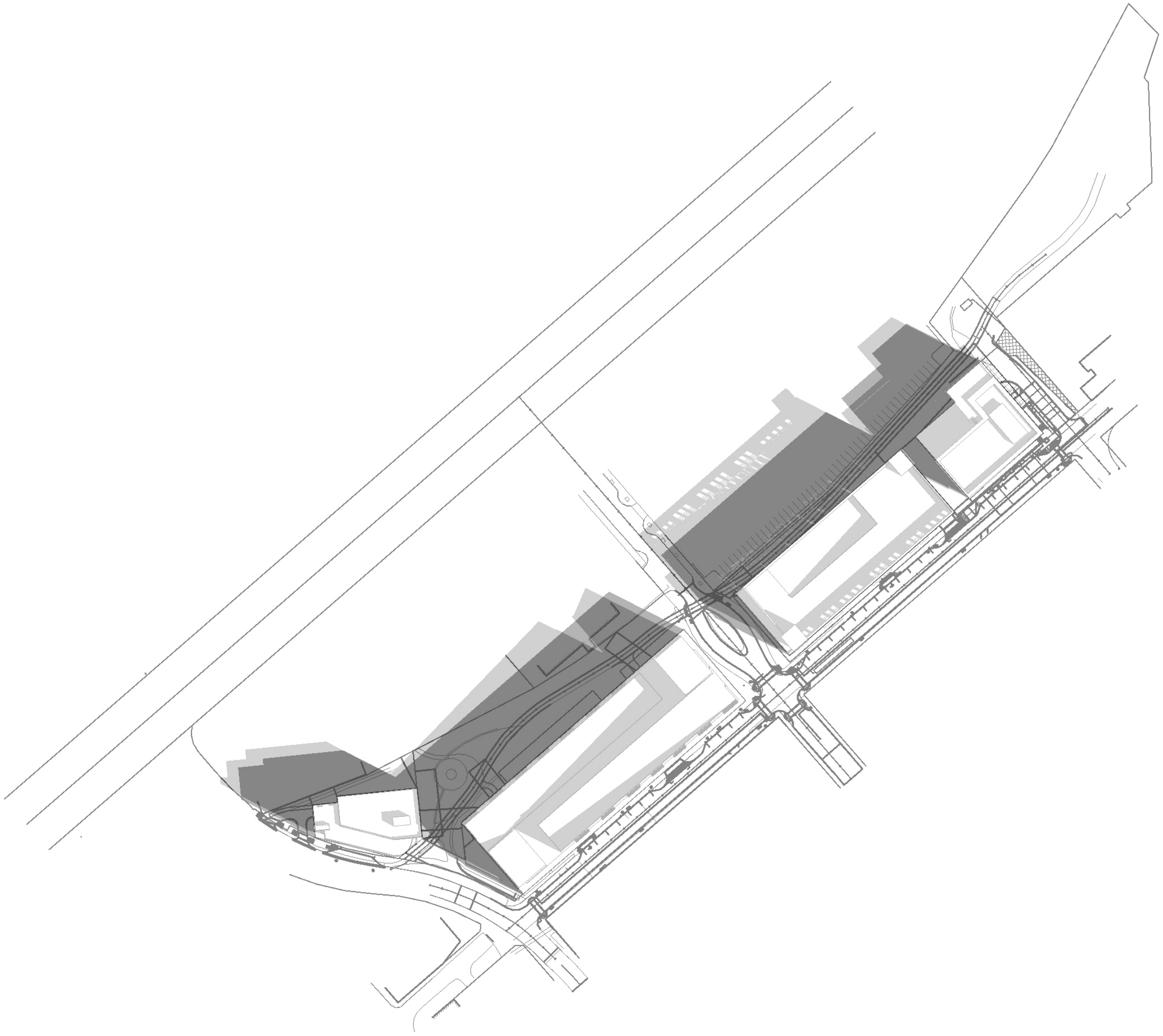
SUMMER SOLSTICE



6 NET NEW SHADOW - 21 JUN 3 PM

1 : 3000

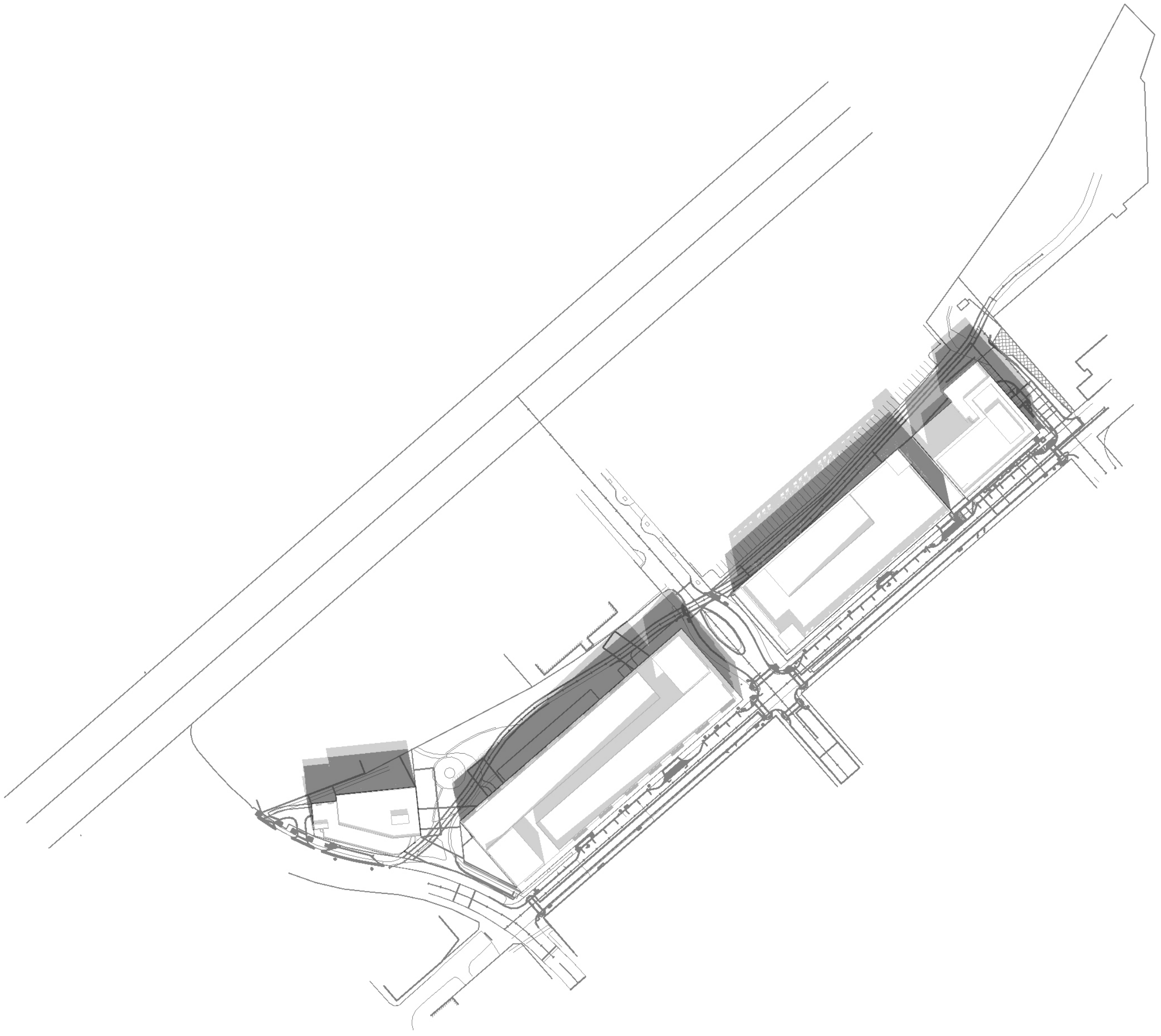
SUMMER SOLSTICE



7 NET NEW SHADOW - 21 SEP 9 AM

1 : 3000

AUTUMNAL EQUINOX

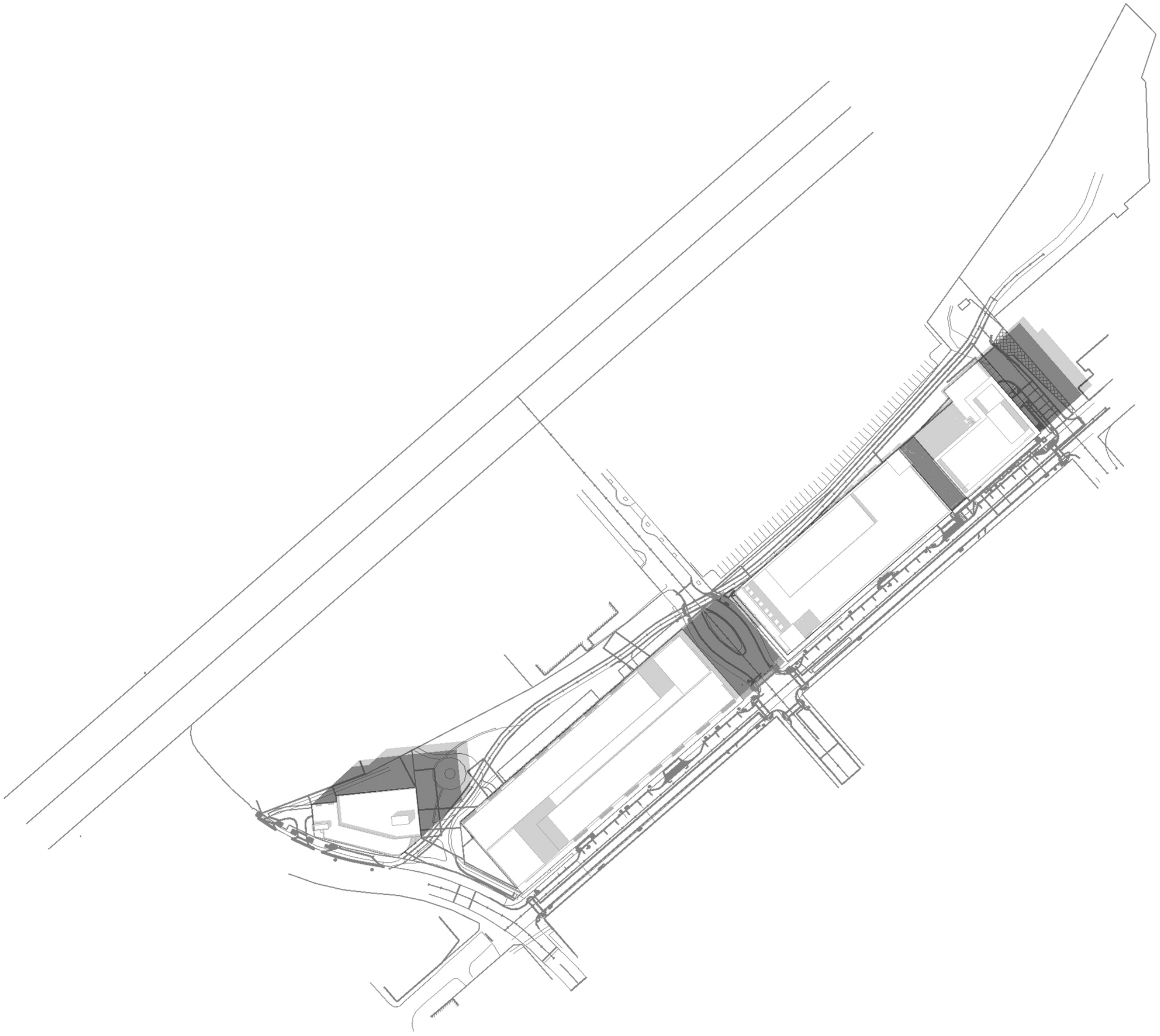


8

NET NEW SHADOW - 21 SEP 12 PM

1 : 3000

AUTUMNAL EQUINOX

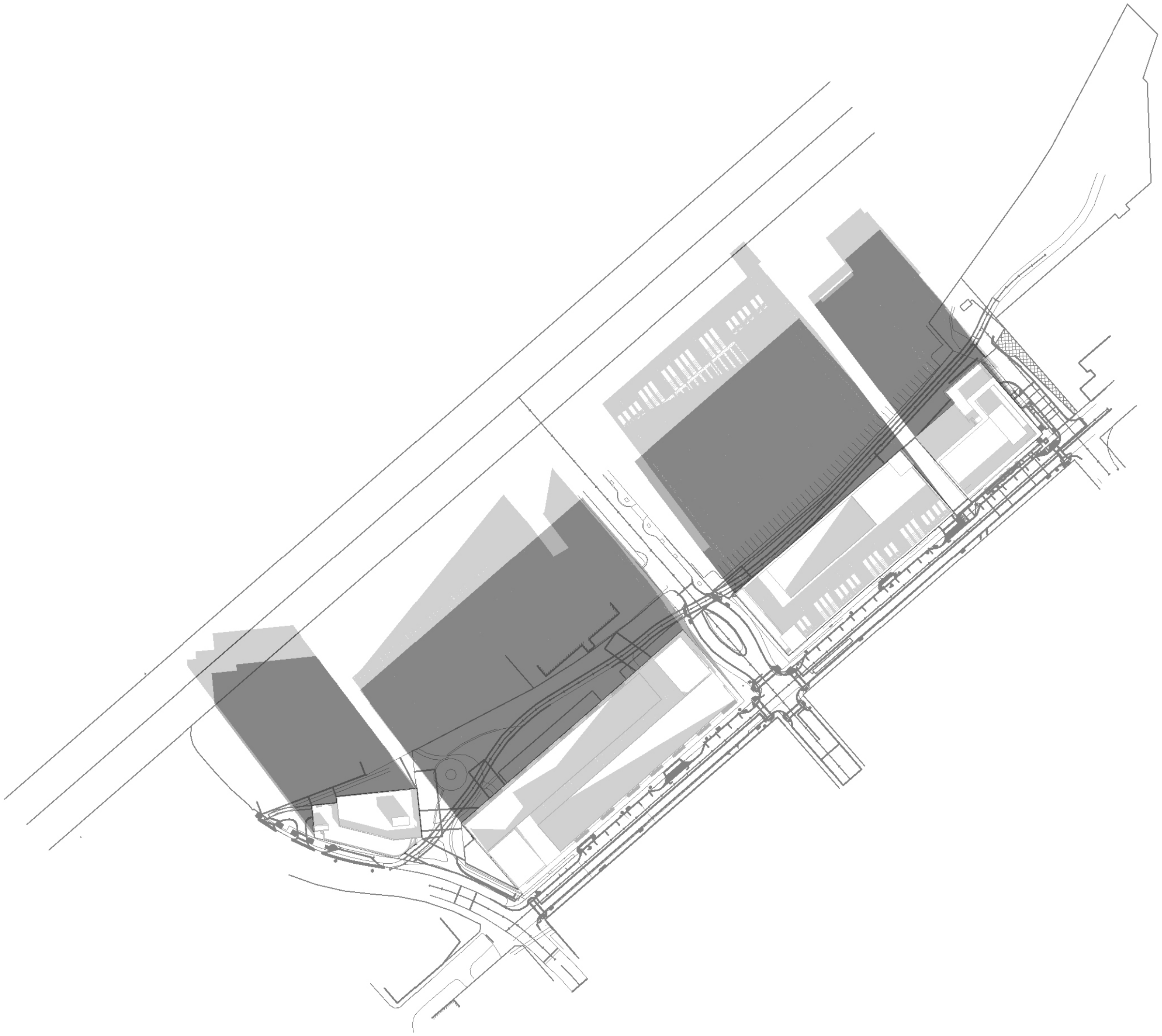


9

NET NEW SHADOW - 21 SEP 3 PM

1 : 3000

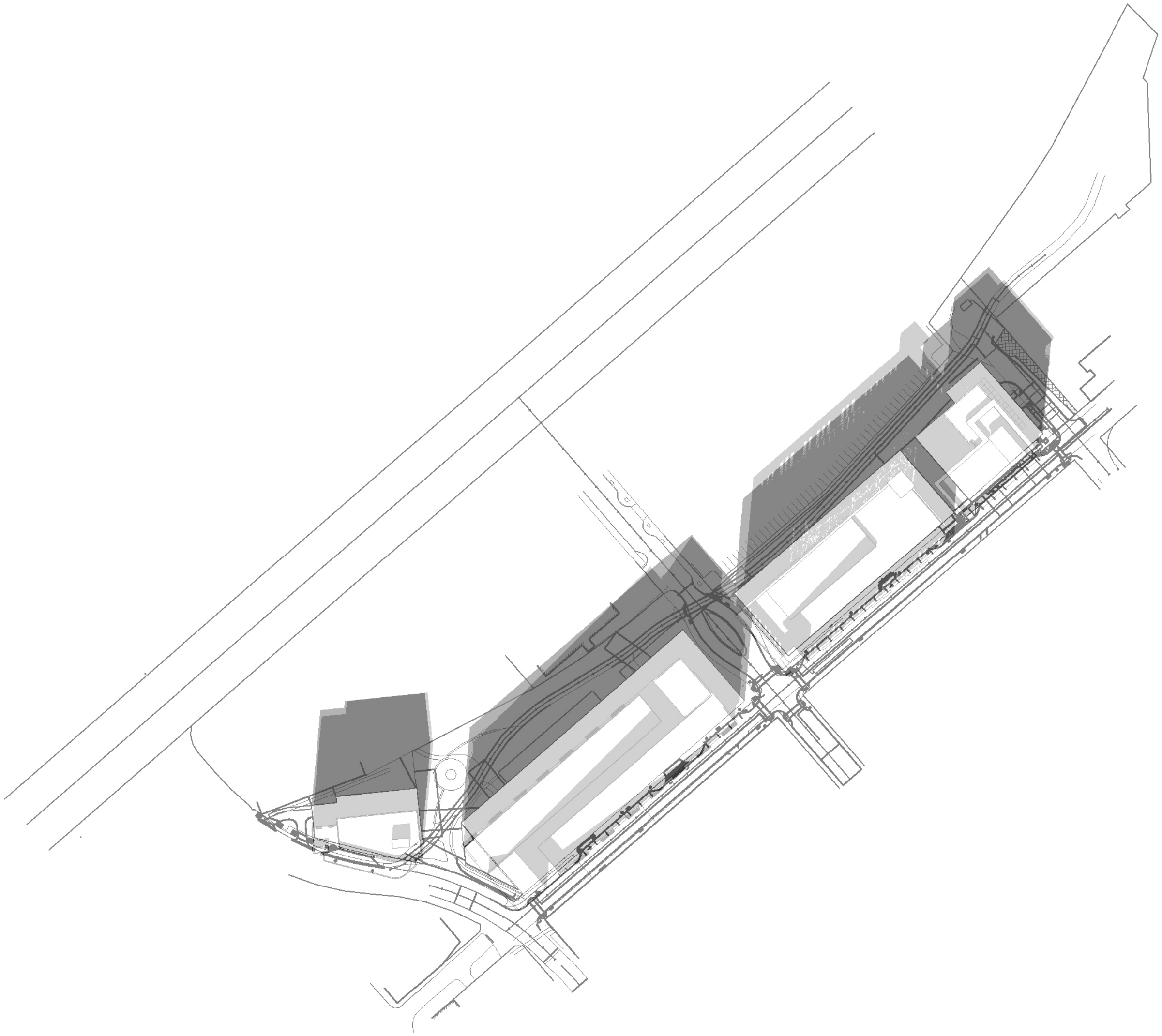
AUTUMNAL EQUINOX



10 NET NEW SHADOW - 21 DEC 9 AM

1 : 3000

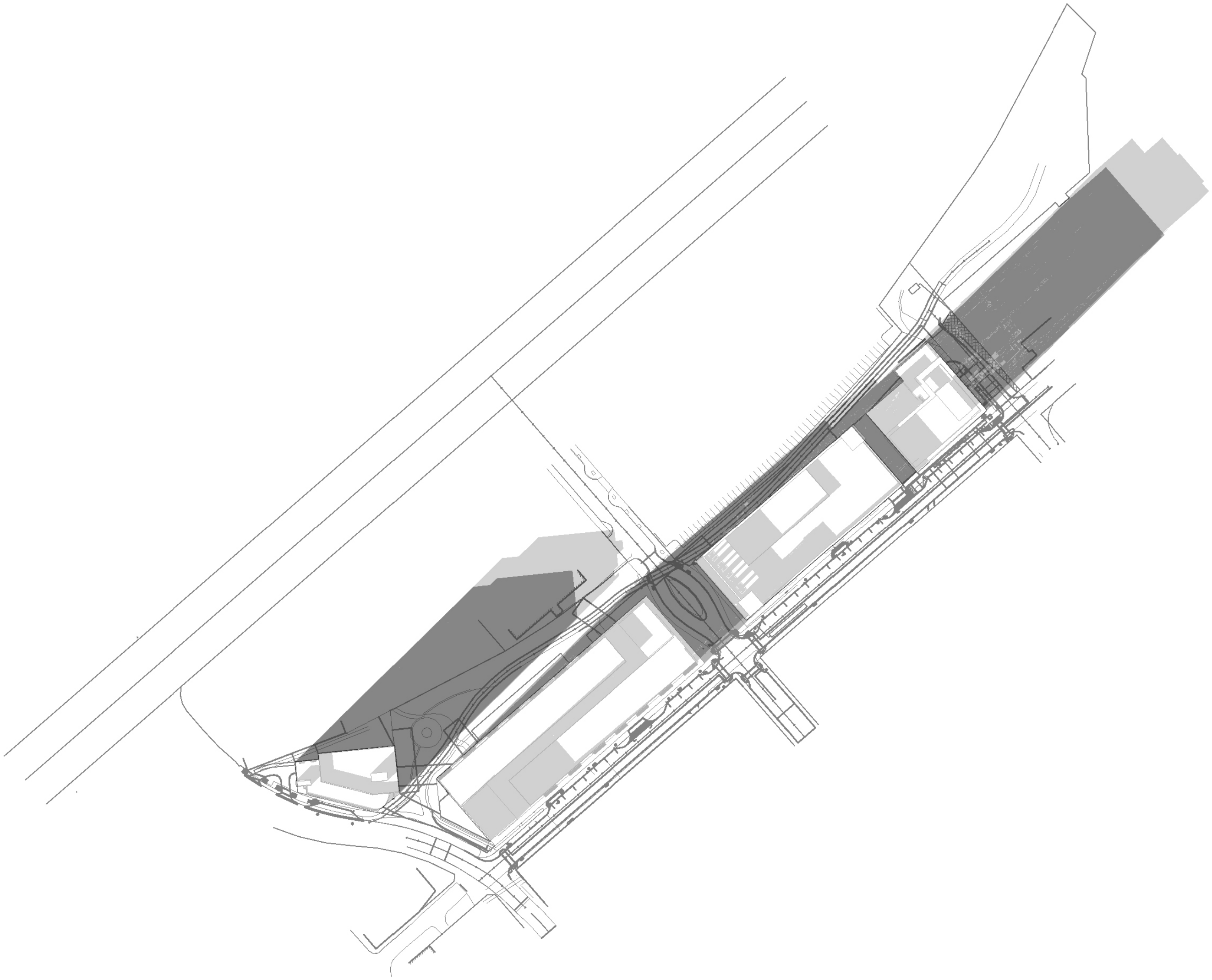
WINTER SOLSTICE



11 NET NEW SHADOW - 21 DEC 12 PM

1 : 3000

WINTER SOLSTICE



12 NET NEW SHADOW - 21 DEC 3 PM

1 : 3000

WINTER SOLSTICE

MEMORANDUM #1

In an effort to address questions and/or concerns raised at the November 12, 2014 Planning Board meeting, and to provide some background information regarding specific details of the Level III Site Plan & Subdivision submission, we have prepared the following memorandum.

Regarding the required mid-block permeability between Chestnut Street and Elm Street, we are requesting a waiver due to issues related to the design, functionality, and efficiency of the structure. Furthermore, it is our belief that the access point would not in any way provide any functional benefit. When contemplating various ways to provide this pass through, we considered the following:

- A physical separation, creating two separate structures- We felt that this was the obvious first choice as it was aesthetically the most attractive option. After review, we came to the conclusion that, due to the unusually narrow lot width and a host of other site limitations, we were unable to design two buildings that made economic sense to construct. Both buildings would require their own building core, service area, and entry lobby. The physical separation would also result in the loss of 20 apartments and approximately six thousand feet of leasable retail space. Additionally, it would "break" the continuous retail activity along Somerset Street that we believe is essential to creating the experience necessary to drive people to an area that today is best described as an urban wasteland.

- An access corridor within the retail space of the currently proposed structure- We feel very strongly that this is not a viable option. Our concerns are economic (the loss of square footage would have an adverse financial impact) and functional (the resulting separation would further limit the flexible subdivision of the retail space), but our primary concern is security related. We believe that this enclosed space will become a haven from inclement weather and a place that people will go to escape the public eye. We have concerns related to loitering and illegal activity, and although we will have personnel on site we will not be equipped to monitor or police activity within this confined space. We believe that the possibility for this type of behavior, in and of itself, will deter usage of this access point by ordinary citizens.

In addition to the specific concerns raised above, the mid-block pass through is further complicated by the fact that when the trail was built, a berm was created along the length of this lot preventing a simple "pass through" and necessitating the deconstruction of this berm and the remediation of the site and disposal of the contaminated material that the berm is currently comprised of. Given that the City of Portland created this condition when the trail was constructed and that the condition lies on city property, we feel that the burden of remediating and re-grading this area would be unfairly placed on the developer in the event that this permeation were required.

Finally, we believe that the proposed pass through has no functional benefit due to existing conditions. The proposed pedestrian connection provides no north/south connectivity as the blocks between Cumberland Avenue and Congress Street, Lancaster Street and Kennebec Street, Kennebec Street and Somerset Street, and Somerset Street and Marginal Way lack any connectivity and the presence of multiple structures limits the likelihood that this condition will change anytime soon. It is this lack of connectivity that would make it highly unlikely that a pedestrian would arrive at the point of the proposed access to begin with. The connectivity to the trail, which we view as the sole benefit of this action, is not improved in any way as an individual accessing the trail can do so at the trailhead that merges with the sidewalk immediately west of the building or at the Chestnut Street crossing to the east. In an effort to improve this access and to improve visibility at the trailhead, the developer has voluntarily removed over three thousand feet of retail space, effectively shortening the length of the building and the distance between trail connections. We believe that the proposed pass through provides no benefit because, in the unlikely event that a pedestrian were to arrive at the point of the proposed access, and due to the fact that the sidewalk runs parallel to the trail, the distance traveled in either direction would be exactly the same.

Prepared by Jonathan Cox

MEMORANDUM #2

In an effort to address questions and/or concerns raised at the November 12, 2014 Planning Board meeting, and to provide some background information regarding the details of the Level III Site Plan & Subdivision submission, we have prepared the following memorandum.

Regarding the use of certain exterior finish materials not otherwise allowed, we are requesting a waiver due to the compatibility of these systems with the intended construction type and the various functional and economic benefits of utilizing these materials in the construction of the building façade. In determining that these materials were the most appropriate application, we considered the following:

- PLEASE NOTE THAT WE ARE NOT REQUESTING A WAIVER FOR THE USE OF VINYL SIDING. WE HAVE NO INTENTION OF UTILIZING THIS MATERIAL IN THE CONSRUCTION OF THIS PROJECT. A WAIVER IS BEING REQUESTED FOR THE USE OF EIFS, A FROM OF SYNTHETIC STUCCO AND A MATERIAL WHOSE APPEARANCE IS VIRTUALLY INDISTINGUISHABLE FROM MATERIALS CURRENTLY APPROVED FOR USE IN THIS ZONE.

- While reviewing the possibility of reducing the height of the proposed structures, we came to the conclusion that the project became economically constrained when maintaining the previously proposed steel frame construction type. We analyzed the benefits and drawbacks of wood frame construction, in this case over a concrete podium, and decided that this framing material was better suited to construct the reduced height buildings. Timber frame construction results in a more environmentally sustainable building structure, has a smaller carbon footprint, and is far more energy efficient to construct and to operate.

  The wood frame structure interacts better with a lighter weight façade material. EIFS, or synthetic stucco, the surface material for which we are requesting a waiver to utilize, is a lighter weight application than a comparable fiber-cement panel. THE INSTALLED LOOK OF BOTH PRODUCTS IS VIRTUALLY IDENTICAL. EIFS is a superior product and has emerged as the preferred option, and is far more widely used than it's fiber-cement alternative. EIFS is an applied siding, whereas the fiber-cement panel is an installed siding. The fiber-cement panel is installed using mechanical fasteners, which are unsightly, maintenance intensive, and are subject to failure. The fiber-cement siding is panelized, creating gaps in the building envelope that contribute to energy loss. EAFS is troweled on, eliminating the use of mechanical fasteners, and creating a sealed application that actually increases the insulation value of the structure. EIFS acts as a "blanket", wrapping the exterior of the structure, reducing air infiltration and energy consumption. It eliminates "thermal breaks" associated with installed siding.

  Virtually indistinguishable from the fiber-cement panel, both are designed to resemble stucco. EIFS, however, expands the architect's design palate as it is available in a virtually limitless amount of colors and textures, whereas fiber-cement siding is fairly limited. It also allows for the construction of architectural detailing that would be cost prohibitive using conventional construction methods, such as cornices, arches, columns, and keystones. These details are computer-generated and laser cut out of insulation board, and the finish material is directly applied to the base insulation.

The lower operating costs and limited maintenance of this product allow for efficient operation of the structure on an ongoing basis. Additionally, it is our opinion that the expanded range of options that this material provides allows us to deliver a superior product at an economical price. In tandem with the other specified façade materials, we believe that we have presented a project that is reflective of the modern-industrial design aesthetic, paying homage to the neighborhoods industrial past while looking forward to its modern future.

Prepared by Jonathan Cox

FEDERATEDEQUITIES 3301 NE 1st Ave, Suite M302, Miami, FL 33137

EXHIBIT 18

PROPOSED EASEMENT, COVENANTS, PUBLIC/PRIVATE RIGHT OF WAY OR OTHER BURDENS OF THE SITE

SUMMARY OF PROPOSED EASEMENTS, COVENANTS, PUBLIC OR PRIVATE RIGHTS OF WAY, OR OTHER BURDENS ON THE SITE

The project site is bisected by the Portland Bayside Trail and Chestnut Street. There are numerous easements required for the project. These are depicted graphically on Drawing C-1.2 which is included in the plan set with this Level III Site Plan Application. The applicant has the benefit of having recently examined the necessary easements required for a mixed-use project at this site. The City and the applicant are aware of the easements necessary to integrate this project into the fabric of the trail and the public streets in this portion of the Bayside area of Portland. In 2013, these encumbrances were identifies as follows:

1. Grading, drainage & utility easement benefiting all parcels of Lots 1 & 3
2. Grading, drainage & utility easement benefiting all parcels of Lots 1 & 3
3. Area to be conveyed to Chestnut Street ROW (46 S.F., 0.001 AC.)
4. Grading, drainage & utility easement benefiting all parcels of Lots 6 & 7
5. Grading, drainage & utility easement benefiting all parcels of Lots 6 & 7
6. Area to be conveyed to Chestnut Street ROW (81 S.F., 0.002 AC.)
7. Limited open space use easement on Lot 7 benefiting the City of Portland
8. Area to be conveyed to Chestnut Street ROW (369 S.F., 0.008 AC.)
9. ROW and property line adjustment
10. Area to be conveyed to Chestnut Street ROW (513 S.F., 0.012 AC.)
11. Limited open space use easement benefiting the City of Portland – 10’ wide
12. 6’ wide limited open space use easements on Lots 3 and 6 benefiting the City of Portland
13. MEWS-30’ access easement benefiting the City of Portland, excepting the reservation for storefront “bays” of midtown to extend up to 2’-0” into either side of the MEWS for up to 30% of the linear footage of the MEWS and common boundary of Lot 6 and Lot 7
14. Limited open space use easement benefiting the City of Portland – 10’ wide
15. Existing 50’ ROW to be expanded to 54’, four foot strip of land to be retained by the City of Portland and added to the Somerset Street ROW
16. 15’ wide temporary grading & construction easement to be granted to City of Portland by Noyes
17. Existing 50’ ROW to be expanded to 54’, four foot strip of land to be retained by the City of Portland to be added to the Somerset Street ROW

EXHIBIT 19

REVIEW OF SECTION 14-526 DESIGN STANDARDS

CONFORMITY WITH APPLICABLE DESIGN STANDARDS

The following statement is made in accordance with the City of Portland Code of Ordinances, Chapter 14 Land Use, Section 14-526.

OVERVIEW

This project conforms with all the applicable design standards of Section 14-526 as demonstrated in the following narrative.

(a) Transportation Standards

1. *Impact on Surrounding Street Systems:*

   A Traffic Impact Study will be prepared which addresses impacts on surrounding street systems and is included in Exhibit 9 of this application. The project will provide improvements and/or partial funding for collaborative improvements with the City of Portland to maintain an acceptable level of service.

2. *Access and Circulation:*

   a. *Site Access and Circulation.*

   AutoTURN templates for vehicle movements have been prepared and are included in Exhibit 11. Pedestrian access and connectivity to existing City pedestrian routes are provided by the design of new sidewalks and connectivity to the Bayside Trail.

   b. *Loading and Servicing.*

   AutoTURN templates have been prepared and are included in Exhibit 11. Loading areas are provided for each of the midtown structures to service the retail and residential building programs.

   c. *Sidewalks.*

   (i) Sidewalks have been provided throughout the site and connect to offsite pedestrian access. All sidewalks shall conform to the City of Portland Technical Manual as shown on the project design drawings.

   (ii) The Plan for midtown Development incorporates new sidewalks which will be bifurcated by a grade change at Pearl and Somerset Streets as shown in the plans. However, with the planned change in roadway elevation the majority of the Somerset frontage will be one continuous sidewalk without grade change.

   Somerset and Elm are designated ‘B Streets’ – the plan includes bump-outs and amenities such as tree wells, landscaping, café seating and provisions for public art by others.

   (iii) The development provides pedestrian access to the Bayside Trail, public transit stop, and abutting land uses (commercial and residential). The proposed design is consistent with the City’s goals for pedestrian connectivity.

3. *Public Transit Access:*

   a. *For any residential development consisting of twenty (20) or more dwelling units or commercial or institutional development of at least 20,000 square feet gross floor area, a transit facility shall be construed where the following criteria are met:*

      The applicant has contacted the Greater Portland Transit District to request a bus stop location near the northerly side of Somerset Street. Please see Exhibit 12 of this application for more detailed information. The applicant will continue to work with Greater Portland Transit District officials on measures to accommodate their programs. The site currently is within the Metro #8 bus circuit route therefore affording excellent access to public transit.

4. *Parking:*

   a. *Location and Required Number of Vehicle Parking Spaces.*

      (i) The development provides enough parking spaces to meet the demand of the project based on Section 14-332(a)(3)a. which requires one (1) space per unit and Section 14-332(h) requiring 1 space/800 sq. ft. However, per Section 14-332.2(c) the Planning Board shall be responsible to establish the project's parking requirements.

      (ii) The applicant has prepared a TDM strategy which included in Exhibit 10 of this Site Plan Application.

      (iii) The applicant proposes the amount of parking which is appropriate for the anticipated uses of this site. The midtownTwo parking garage will contain 828 parking spaces.

      (iv) Parking spaces and aisles have been designed to meet the dimensional requirements of the Technical Manual and/or are considered acceptable within guidelines commonly used for similar projects.

      (v) Parking Garage – Specific information regarding the B-7 Land Use Standards is included in Exhibit 17 of this application.

   b. *Location and Required Number of Bicycle Parking Spaces.*

      (i)(b) The project has provided bicycle parking at each building facility in accordance with the Technical Manual. The bicycle parking spaces are shown on the landscaping plans and are further explained in Exhibit 17 of this application.

   c. *Motorcycles and Scooter Parking.*

      (i) The project provides designated motorcycle/scooter parking in the parking structure facility.

   d. *Snow Storage.*

      The applicant intends to contract with a local snow removal/grounds maintenance operator who will be responsible to conduct snow removal in accordance with typical protocols in the City of Portland.

5. *Transportation Demand Management (TDM):*

   a. The applicant has developed a TDM Plan pursuant to the City of Portland's Code of Ordinances.

b. The TDM Plan incorporates the City goals by integrating elements described in the Technical Manual.

(b) Environmental Quality Standards:

1. *Preservation of Significant Natural Features:*

   a. None of these natural features are applicable to the project site.

   b. Where areas set aside for preservation are part of a larger existing habitat block extending beyond the boundaries of the site, the contiguity of these features shall be preserved, where possible.

   The Applicant has contacted Federal and State environmental agencies for review of endangered species and found that there are no known significant wildlife or unusual areas exist on the project site. Please see Exhibit 16 all correspondence to these agencies.

   c. The applicant is not requesting a waiver from this standard are the preservation of natural features does not apply.

2. *Landscaping and Landscaping Preservation:*

   a. Landscape Preservation.

   (i) There are no existing trees located on the respective parcels.

   (ii) See response above.

   (iii) There are several trees located within the Bayside Trail that will require relocation. The applicant will coordinate with the City Arborist to select appropriate siting of trees.

   (iv) Waiver: There are no existing trees located on the respective parcels, no waiver is required.

   a. NA

   b. NA

   c. NA

   (v) Shoreland Zoning: NA

   b. Site Landscaping.

   (i) Landscaped Buffers:

   a. Screening. There are no external loading areas, dumpsters, or storage areas proposed. Proposed transformers located to the rear of “midtownFour” have been provided with a dense screening of evergreen trees and shrub massing. All transformers will be provided with an ornamental fence and limited landscape to soften appearance. Due to concern for public safety, no dense plantings are proposed.

   b. Understory Plantings. The proposed buildings fronting along Somerset Street, Chestnut Street, Elm Street and the future Pearl Street extension are located at or within 10 feet of the right of way with sidewalk extending to face of buildings. Landscaping within these areas is limited to street trees and raised planter beds where sidewalk grade changes required a ramp and stair configuration.

c. *Industrial and Commercial Zones.* N/A

d. *Industrial and Commercial Zones. N/A*

e. *Buffer from Surrounding Development.* The proposed improvements along the Bayside Trail behind the proposed "midtown" structures provides for an integrated hardscape and landscape as part of the public space. The landscape along the northerly edge of the trail behind "midtownOne" and the Parking Garage includes additional trees and understory vegetation to enhance the trail edge.

(ii) *Parking Lot Landscaping:*

There are no surface parking areas proposed. Remaining items are not applicable.

(iii) *Street Trees:*

a. Street trees are proposed along all street frontages. Selection of tree species has been coordinated with the City Arborist. There are 445 total apartments proposed that require 1 street tree per unit or 445 trees. There is not adequate street frontage or along the Bayside Trail to locate the required number of trees. See waiver request below.

b. Waiver: The applicant is requesting a waiver of the requirement for providing one street tree per residential unit. The maximum number of units proposed for the "midtown" project is 445 units. A total of 97 trees, not including replaced street trees along Elm Street, are being provided along Chestnut Street, Somerset Street, Pearl Street, and along the Bayside Trail. The request is based upon the enhanced planting method that includes 4 FT x 8 FT raised (granite curb) planting beds and a structural planting system below grade that provides for an expanded root zone that is approximately 60 % larger than typical street tree planting area. There are 29 raised planters located along the street frontages and the cost to install improvements for these trees well exceeds the fee in lieu for the additional 349 trees.

3. *Water Quality, Stormwater Management and Erosion Control:*

a. *Stormwater:*

(i) All stormwater draining onto the site from adjacent properties has been accounted for in the pipe sizing and been redirected to a new discharge location.

(ii) All stormwater runoff is proposed to discharge directly to existing City systems. The project will not adversely impact adjacent lots.

(iii) All stormwater runoff is proposed to discharge directly to existing City systems. The project will not adversely impact adjacent lots.

(iv) All stormwater runoff is proposed to discharge directly to existing City systems. The project will not adversely impact adjacent lots

b. The Stormwater Management Plan meets the requirements and goals stated in Section 5 of the Technical Manual. A Stormwater Management Report and Operation & Maintenance Manual are included in Exhibit 13 of this application.

c. The project is not located in a watershed of an urban impaired stream as listed by the MaineDEP.

d. N/A

e. The project is serviced by a public wastewater system. The project will not pose a risk of further groundwater contamination beyond current background conditions.

f. The project will be connected to the public sanitary sewer system which is adequately sized for the project flows.

(c) Public Infrastructure and Community Safety Standards.

1. *Consistency with City Master Plans:*

   This information is provided in Exhibit 20 of the application.

2. *Public Safety and Fire Prevention:*

   a. *Crime Prevention (CPTED):*

   Having full time residents overlooking public spaces has been shown to be the best form of natural surveillance. Midtown will bring the eyes of the tenants of more than four hundred new apartments with direct view of the Bayside Trail Somerset, Pearl, Chestnut and Elm streets, and the Mews and Courtyard.

   b. *Emergency Vehicle Access:*

   The site has been designed to allow for emergency response vehicles to move around all areas of the site.

   c. *Adequate Water Supply and Hydrant Location:*

   The project provides several new fire hydrants to meet the requirements of Section 5 of the Technical Manual.

3. *Availability and Adequate Capacity of Public Utilities:*

   a. The applicant has secured or will secure letters from all applicable utilities stating their ability to serve this project. The project will require all new utility infrastructure throughout the site. This information is provided in Exhibit 5 of the application.

   b. All on site electrical lines will be underground.

   c. All new utility infrastructure will meet the provisions of the Technical Manual.

   d. The project will require service connections to the existing sanitary sewer facilities in the adjacent streets.

   e. The sanitary sewer collection system is designed to meet all applicable sections of the Technical Manual. The stormwater management system is designed to meet the requirements of the Technical Manual and Chapter 500 of the MeDEP Stormwater Management Standards.

   f. The project will use an internal trash room or trash compactors to store trash and recyclables temporarily until a contracted waste management company can pick up and dispose of the solid waste.

(d) Site Design Standards:

1. *Massing, Ventilation and Wind Impact:*
    a. *Wind Conditions:* The nearest structure to the buildings of midtown is *Trader Joes* on Elm Street near midtown Four. This is a windowless façade and therefore ventilation of Trader Joes will be unchanged. We understand that a wind study was undertaken for a previous development on the site featuring buildings substantially greater than two times as high. That study found no unsafe conditions; reduced height brings wind speed decreases – it is therefore concluded that the currently proposed structures will not create unsafe wind conditions at any adjacent publicly accessible open spaces.

    b. *No diminution in value or utility of neighboring parcels:* By replacing vacant land with active retail street frontage and medium density residential development, the proposed project will likely increase the value of neighboring parcels.

    c. *HVAC Venting:* Heating and cooling will be via electric heat pumps, hence there will be no products of combustion.

2. *Shadows:*
    a. The B-7 district shadow requirements are regulated under the B-7 design guidelines. See review of these standards in Exhibit 17, along with the required shadow study provided as an attachment to Exhibit 17.

3. *Snow and Ice Loading:*
    a. The buildings will be designed without wide flat ledges, out sloping cornices or sills which might accumulate and potentially shed snow and/or ice onto the public way.

4. *View Corridors:*
    a. The low-rise buildings protect designated downtown view corridors.

5. *Historic Resources:*
    a. Not applicable to this project. The development is not located in a historic district, historic landscape district or City designated landmark. A copy of the correspondence to the Maine Historic Preservation Office is included in Exhibit 16 of the application.

6. *Exterior Lighting:*
    a. *Site Lighting:* Exterior lighting will be designed to meet the requirements of Section 12 of the Technical Manual.

    b. *Architectural and Specialty Lighting:* Exterior lighting will be located only at entrances for safety, security and a sense of welcome, and at egress and service doors as required by code. These lights will be shielded or cut-off fixtures that will emit no direct light upwards nor into adjacent residential properties.

    c. *Street Lighting:* Exterior lighting will be designed to meet the requirements of Section 12 of the Technical Manual. For further explanation, please see review of B-7 Land Use Requirements in Exhibit 17.

7. *Noise and Vibration:*
    a. HVAC and Mechanical Equipment
        (i) HVAC Noise

Compressor/condenser (outdoor) units for the heating cooling systems will be located on the roofs and screened from view from the public way by parapets. As shown by the cut sheets provide at the end of this section they emit 55 dBA sound pressure at the roof, and likely less than 50dBA at street level seventy feet below.

As it will be naturally ventilated, the garage within midtownTwo will not have any roof mounted mechanical equipment.

midtownOne and midtownThree will be heated and cooled by "split system" heat pumps. Each apartment will have a dedicated rooftop outdoor unit with compressor and fan, and indoor units as required by space layouts. The attached data sheets describe this equipment. The roof plans provided in the drawing set indicate the location of the outdoor units clustered in groups near the center of the roof.

These outdoor units will be visually screened from the street by the buildings' parapet walls which will also aid in sound attenuation. As noted, the sound from these units will be well below 50 dBA at street level.

The studio apartments of midtownFour will be heated and cooled by packaged unit heat pumps mounted in the façade below the windows. These units are very quiet and will project sound at less than 50 dBA. The placement of the exterior louvers for these units has been carefully integrated into the design of the facades.

Kitchen exhaust fans indicated on the drawings will not be part of the base building construction. Choice of fan, and placement on the roof will be dependent on tenant requirements. At the time of tenant improvement permitting the tenant will provide cut sheets showing that the sound power of the fans will be below 58 dBA at the roof, and therefore attenuated to below 50dBA at street level

(ii) *Emergency Generator*

Does not apply – generator not required for low-rise buildings or naturally ventilated garage.

8. *Signage and Way finding:*

   a. *Signage:* All standard signage is included in the Site Layout Drawing C-2.0 as regulated by Division 22 of the code. Future tenant related signage associated with the proposed retail spaces will be the responsibility of individual tenants who shall obtain the necessary sign permits from the City's Code Office.

9. *Zoning Related Design Standards*

   a. See separate review of B-7 Design Standards in Exhibit 17 of the application.

   b. The extra height in District A does not apply. The proposed building heights of 75 and 92 feet are well below the allowed heights of 105 and 125 feet.

EXHIBIT 20

COMPLIANCE WITH COMPREHENSIVE PLAN

COMPLIANCE WITH PORTLAND COMPREHENSIVE PLAN
(review of *A New Vision for Bayside* for Final Level III Site Plan)

(*A New Vision for Bayside* was adopted as part of Portland's Comprehensive Plan by city council December 20th 1999)

The plan embodied in the above captioned document presents a description of an extension of the neighborhood to create an Urban Gateway along I-295. Over the 15 years since its adoption, the plan has guided many important accomplishments:

- Railway property has been converted to Bayside Trail
- Soil has been remediated
- Scrapyards have been converted to development sites
- Commercial businesses and office properties have been developed on Marginal Way fulfilling the vision of Bayside Avenue.
- A natural foods market has been established.

The proposed development is consistent with this plan and directly supports three of its visions.

A Walkable District

The development provides continuous street level retail frontage along the north side of Somerset St. from Pearl to Elm Streets. The new buildings' ground levels must be constructed at elevation 12.0 to be above FEMA projected 100 yrs. storm surge or flood levels. To assure easy pedestrian interaction with the retail both Somerset Street and a portion of the Bayside Trail will be reconstructed to this elevation and provided with new storm drainage infrastructure.

Critical Mass of Dwellings

The plan called for 800 new units of housing in the district. Bringing new permanent households and residents to the district was rightly viewed as a key component to creating a vibrant and active 7 day per week, 18 hour per day neighborhood environment. The plan further established the immediate goal of 300 units in five years (which has been met through infill and a few mid-sized developments) and the extended goal of 500 additional units in twenty five years. The proposed development of 440 dwelling units will go a long way to meeting this extended goal within the time period envisioned.

Multi-Level Parking Structures

The plan called for well-designed multi-level parking structures to replace surface parking and thus encourage a compact, walkable, street-oriented form of development. Concentrated parking was also seen as a key component and complement to transit oriented development – recognizing that new residents would embrace walking, biking, and public transit for regular commuter trips, but nonetheless would own cares for evening, weekend, and other off-peak trips, and those cars would require off-street garaging.

The project is therefore both in compliance with the vision and directly supports the action items of the plan.

Prepared by CBT Architects
November 14, 2014

Indoor Units

MSZ-FH09, 12, 15NA
New sleek design offers many new features including new multi-functional wireless remote controller.

- Triple-action filtration including anti-allergen enzyme filter.
- Double-vane air delivery for enhanced circulation.
- i-see Sensor™ 3D senses human heat signatures.

MFZ-KA09, 12, 18NA
Floor-mounted indoor units are perfect for difficult areas that may be smaller or don't have usable wall space.

- Top and bottom discharge vanes.
- Wireless remote control with smart set feature.
- Front panel filter access for ease of cleaning.

SLZ-KA09, 12, 15NA
Ceiling-recessed indoor units offer a wide airflow pattern for better air distribution in a less obtrusive style.

- Ventilation air knockouts available.
- Offers a 2, 3, or 4 way airflow pattern.
- Built-in condensate lift mechanism (up to 20").

MSZ-GE09, 12, 15, 18, 24NA
Slim, wall-mounted units provide individual room control in a variety of applications.

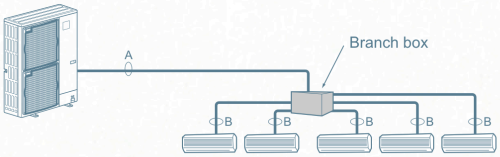
- Offers wide angle of airflow, 150 degrees from left to right.
- Quiet operation as low as 19 dB(A).
- Provides cooling and heating in a wide range of capacities.

SEZ-KD09, 12, 15, 18NA
Horizontal-ducted indoor units provide comfort and efficiency while staying hidden in ceiling or beneath the floor.

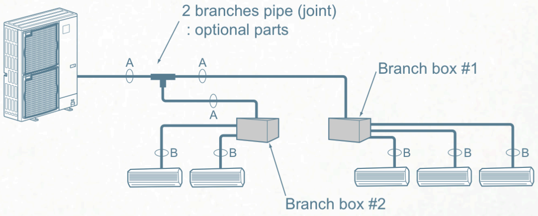
- Build-in condensate lift mechanism (up to 22").
- Static capability up to 0.20" WG.
- Optional filter box with MERV-8 filters.

BRANCH BOX CONNECTIONS

When Using One Branch Box
Flare Connection - Max. 5 indoor units



When Using Two Branch Boxes
- Max. 8 indoor units



MXZ H2i Outdoor Units | Heat Pump

Model Name			MXZ-2C20NAHZ	MXZ-3C24NAHZ	MXZ-3C30NAHZ	MXZ-4C36NAHZ
Cooling * Non-Ducted/ Ducted	Rated Capacity	Btu/h	18,000 / 20,000	22,000 / 23,600	28,400 / 27,400	36,000 / 36,000
	Capacity Range	Btu/h	6,000- 20,000	6,000- 23,600	6,000- 28,400	6,000- 36,000
	Rated Total Input	W	1,334 / 1,819	1,630 / 2,360	2,272 / 2,661	2,570 / 3,180
Heating at 47F* (Non-Ducted/ Ducted)	Rated Capacity	Btu/h	22,000 / 22,000	25,000 / 24,600	28,600 / 27,600	45,000 / 45,000
	Capacity Range	Btu/h	7,400- 25,500	7,200- 30,600	7,200- 36,000	7,200- 45,000
	Rated Total Input	W	1,612 / 1,748	1,725 / 1,871	2,096 / 2,187	3,340 / 4,250
Heating at 17F* (Non-Ducted/ Ducted)	Rated Capacity	Btu/h	13,700 / 13,700	14,000 / 14,000	18,000 / 16,500	34,000 / 36,000
	Maximum Capacity	Btu/h	22,000 / 22,000	25,000 / 24,600	28,600 / 27,600	45,000 / 45,000
	Rated Total Input	W	1,450 / 1,588	1,622 / 1,635	1,991 / 1,993	3,500 / 4,590
Heating at 5F*	Maximum Capacity	Btu/h	22,000	25,000	28,600	45,000
Efficiency	SEER (Non-Ducted/Ducted)		17.0 / 15.0	19.0 / 15.5	18.0 / 16.0	19.1 / 15.8
	EER (Non-Ducted/Ducted)		13.5 / 11.0	13.5 / 10.0	12.5 / 10.3	14.0 / 11.3
	HSPF (Non-Ducted/Ducted)		9.8 / 9.5	10.0 / 9.0	11.0 / 9.8	11.3 / 10.1
Electrical Requirements	Power Supply	V, Ph, Hz	208 / 230V,1-Phase, 60 Hz			
	Recommended Fuse/Breaker Size	A	40	40	40	50
	MCA	A	29	30	30	42
Voltage	Indoor - Outdoor S1-S2	V	AC 208 / 230			
	Indoor - Outdoor S2-S3	V	DC ± 24			
Compressor			DC INVERTER - driven Twin Rotary			
Fan Motor (ECM)		FLA	1.9	1.9	1.9	0.4 + 0.4
Sound Pressure Level	Cooling	dB(A)	54	54	54	49
	Heating		58	58	58	53
External Dimensions (H x W x D)		In / mm	41-9/32 x 37-13/32 x 13			52-11/16 x 41-11/32 x 13(+1)
Net Weight		Lbs / kg	187 / 85	189 / 86	189 / 86	276 / 125
External Finish			Munsell No. 3Y 7.8/11			
Refrigerant Pipe Size O.D.	Liquid (High Pressure)	In / mm	1/4 / 6.35			3/8 / 9.52
	Gas (Low Pressure)		A,B: 3/8 / 9.52	A: 1/2 / 12.7; B,C: 3/8 / 9.52		5/8 / 15.88
Max. Piping Length for Each Indoor Unit		Ft / m	164 / 50	230 / 70		492 / 150
Max. Refrigerant line Length			82 / 25	82 / 25		262 / 80
Max. Refrigerant Pipe Height Difference	If IDU is Above ODU	Ft / m	49 / 15	49 / 15		164 / 50
	If IDU is Below ODU	Ft / m	49 / 15	49 / 15		131 / 40
Connection Method			Flared / Flared			
Refrigerant			R410A			

Specifications are subject to change without notice.

FRIEDRICH

Kühl® Series
Room Air Conditioners

PURCHASER	P.O. #	DATE
PROJECT	LOCATION	
ENGINEER	ARCHITECT	
SUBMITTED BY	FOR APPROVAL	FOR REFERENCE

ITEM	PLAN DESIGNATION	QUANTITY	COOLING BTU/H	VOLTAGE	FRIEDRICH MODEL

Comfort & Convenience

- Convenient control from your smartphone or computer via FriedrichLink® (required accessory sold separately)
- 24-hour timer
- Up to 4 cooling and 4 fan-only speeds on select models†
- Automatic fan speed adjustment
- Auto-changeover from cool to heat; heat to cool to maintain set temperature (Kühl+ models except EQ08)
- 8-way air flow control
- Temperature readout can display set temperature and room temperature
- LCD panel auto dims if not in use
- LCD settings lockout option (ON/OFF)
- Premium remote control allows user to activate schedule, adjust temperature, adjust fan speed or select auto-fan; can also switch from cool to heat and heat to cool (Kühl + models)

Sound Reduction Technology

- Steel inner wall and extra dense insulation materials block outdoor noise
- Vibration isolating design and components diminish traditional operating sound levels
- Precision engineering maximizes air flow while delivering ultra quiet operation

Maintenance & Installation

- Check filter reminder and error code storage
- Same sleeve dimensions for 30+ years for easy replacement
- Slideout chassis for more permanent installation and easier access for maintenance
- Installs in a window or in-wall
- Includes heavy-duty window installation hardware (optional accessory on Kühl+ models)
- Rugged hardboard side panels or (heavy duty side curtains on SQ and EQ models) for a more permanent installation
- Power cord can run left or right
- Defrost control protects coil against freeze up
- Firm grip handles for easier chassis installation and removal

Energy Management & Compliance

- Convenient control from your smartphone or computer via FriedrichLink™ (optional accessory sold separately)
- 2 ready-to-go 7-day energy management programs
- Autofan mode saves money by conserving energy
- ENERGY STAR® qualified models, including heat pumps
- Environmentally-friendly R-410A refrigerant used in all models
- Recyclable packaging
- RoHS compliant

Safety & Security

- EntryGard™ anti-intrusion protection - secures chassis to the sleeve with a steel retaining wire to deter 'kick-in' intrusion
- Power cord current leakage protected
- Aluminum outside grille
- Insect barrier*

Health & IAQ

- Superior fresh air intake and stale air exhaust vent*
- Washable, antimicrobial air filter
- Premium carbon filter provides superior air filtration with ratings as high as MERV 6, while also adsorbing odors, and reducing ozone and VOCs when used in conjuction with standard filter
- Hinged door for easy filter access

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* Feature not available on SQ and EQ models.
**Nut driver not required for Kühl SQ and EQ models.

Specifications

★ ENERGY STAR® models

	Model	Cooling Btu	Heating Btu	Volts Rated	Cooling Amps	Cooling Watts	Heating Amps	Heating Watts	Energy Efficiency Ratio EER	Estimated Yearly Operating Cost	COP	Moisture Removal-Pints/HR	CFM	Sleeve	Net Wt. lbs.	Ship Wt. lbs.
	Kühl®															
★	SQ05N10B	5200	-	115	4.7	464	-	-	11.2	$42	-	0.5	190	Q	72	85
★	SQ06N10B	5700	-	115	4.7	509	-	-	11.2	$46	-	0.5	190	Q	72	85
★	SQ08N10B	7900	-	115	6.4	705	-	-	11.2	$63	-	1.2	200	Q	71	84
	SQ10N10	9600	-	115	9.2	980	-	-	9.8	$88	-	2.1	240	Q	71	84
★	SS08N10B	8000	-	115	6.1	696	-	-	11.5	$63	-	1.9	255	S	99	121
★	SS10N10B	9700	-	115	7.8	858	-	-	11.3	$77	-	2.5	300	S	106	128
★	SS12N10B	12000	-	115	9.7	1062	-	-	11.3	$96	-	3.0	300	S	112	134
★	SS14N10A	13500	-	115	12.0	1250	-	-	10.8	$113	-	4.0	275	S	116	133
★	SS12N30B	12000/12000	-	230/208	4.9/5.2	1062/1062	-	-	11.3/11.3	$96	-	3.4	325	S	112	134
★	SS16N30	15500/15200	-	230/208	6.5/7.1	1449/1421	-	-	10.7/10.7	$130	-	4.8	350	S	116	136
★	SM15N10B	15000	-	115	12.0	1339	-	-	11.2	$121	-	3.5	360	M	141	154
★	SM18N30	17500/17200	-	230/208	7.4/8.0	1635/1607	-	-	10.7/10.7	$147	-	4.6	350	M	140	161
★	SM21N30B	20500/20000	-	230/208	9.3/10.2	2092/2062	-	-	9.8/9.7	$188	-	6.0	425	M	132	153
	SM24N30A	23500/23200	-	230/208	12.7/13.6	2765/2730	-	-	8.5/8.5	$249	-	7.1	430	M	152	173
★	SL24N30B	24000/23800	-	230/208	10.8/11.4	2449/2429	-	-	9.8/9.8	$220	-	7.0	640	L	191	212
★	SL28N30B	28000/27600	-	230/208	13.0/14.0	2857/2875	-	-	9.8/9.6	$257	-	8.5	640	L	193	214
	SL36N30B	36000/35500	-	230/208	17.5/19.2	4000/3944	-	-	9.0/9.0	$360	-	12.0	725	L	212	248
	Kühl+® (Heat Pump)															
★	YS10N10B*	9500	8000	115	8.2	913	7.3	870	10.4	$82	2.7	2.0	300	S	109	131
★	YS12N33B	11500/11300	9400/9000	230/208	5.0/5.4	1106/1087	4.6/5.0	1132/1139	10.4/10.4	$100	2.4/2.3	3.0	375	S	115	136
★	YM18N34B	17500/17200	15500/15000	230/208	7.5/8.1	1683/1654	7.8/8.4	1824/1765	10.4/10.4	$151	2.5/2.5	5.4	370	M	141	154
★	YL24N35B	24000/24000	22000/22000	230/208	10.8/11.6	2449/2449	10.7/11.4	2391/2391	9.8/9.8	$220	2.6/2.6	7.0	600	L	197	211
	Kühl+® (Electric Heat)															
	EQ08N11B	7900	4000	115	6.4	705	11.2	1290	11.2	$61	-	1.2	200	Q	72	84
	ES12N33B	12000/12000	10700/8900	230/208	4.9/5.2	1062/1062	16.0/14.7	3500/2900	11.3/11.3	$96	-	3.4	325	S	113	128
	ES16N33	15500/15200	10700/8900	230/208	6.5/7.1	1449/1421	16.0/14.7	3500/2900	10.7/10.7	$130	-	4.8	350	S	117	133
	EM18N34	17500/17200	13000/10600	230/208	7.4/8.0	1635/1607	19.5/17.0	4200/3500	10.7/10.7	$147	-	4.6	350	M	141	154
	EM24N34A	23500/23200	13000/10600	230/208	12.7/13.6	2765/2730	19.5/17.0	4200/3500	8.5/8.5	$249	-	7.1	430	M	153	166
	EL36N35B	36000/35500	17300/14300	230/208	17.5/19.2	4000/3944	24.0/22.4	5500/4650	9.0/9.0	$360	-	12.0	725	L	213	246

* Operates on 115 volt and is not equipped with supplemental heat. Will not provide heat at temperatures below 40°F.
Friedrich room air conditioners are designed to operate in outdoor temperatures from 60° F to 115° F.

Kühl+ Heat Pump heating information indicates heat pump performance. Kühl+ and Chill+ Electric Heat heating information indicates electric heat strip performance. For Kühl+ Heat Pump electric heating performance refer to corresponding Kühl+ Electric Heat model.

As an ENERGY STAR® partner, Friedrich Air Conditioning Co. has determined that the selected ENERGY STAR® models meet the ENERGY STAR® guidelines for energy efficiency.

The consumer- through the AHAM Room Air Conditioner Certification Program- can be certain that the AHAM Certification Seal accurately states the unit's cooling and heating capacity rating, the amperes and the energy efficiency ratio.

Your operating costs will depend on your utility rates and use. The estimated operating cost is based on a electricity cost of $ .12 per kWh. For more information, visit www.ftc.gov/energy.Due to continuing research in new energy-saving technology, specifications are subject to change without notice.

Installation

Sleeve	Height INCHES	Width INCHES	Depth with Front INCHES Ⓐ	Shell Depth to Louvers INCHES Ⓑ	Minimum Extension Into Room* INCHES	Minimum Extension Outside * INCHES	Window Width INCHES		In-wall Installation Finished Hole INCHES			Carton Dimensions INCHES		
							Minimum**	Maximum	Height	Width	Max. Depth Ⓒ	Height	Width	Depth
Q	14"	19 ¾"	21 3/8"	8 ½"	5 ½"	10 ¾"	22"	42"	14 ¼"	20"	8 ½"	18 3/4"	25 1/2"	22 3/4"
S	15 15/16"	25 15/16"	29"	8 ¾"	5 ¾"	16 15/16"	27 3/8"	42"	16 3/16"	26 3/16"	7 3/8"	19"	34 1/2"	29"
M	17 15/16"	25 15/16"	29"	8 ¾"	5 ¾"	16 15/16"	27 3/8"	42"	18 3/16"	26 3/16"	7 3/8"	21"	34 1/2"	29"
L	20 3/16"	28"	35 ½"	16 ½"	5 3/8"	18 15/16"	29 7/8"	42"	20 3/8"	28 ¼"	15 1/8"	24 1/2"	38 7/8"	31 5/8"

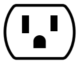
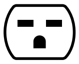
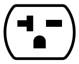
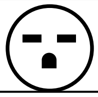
* Minimum extensions when mounted in a window.

** Minimum widths achieved using one side curtain assembly as opposed to both in a standard installation.

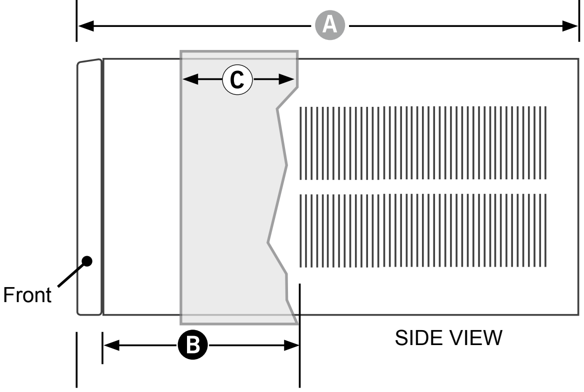
† Sleeve P1 does not have In-wall hole dimensions, as these units are fixed chassis and should not be installed In-wall.

NOTE: S,M and L sleeves may be installed in window with no side kits if properly installed.

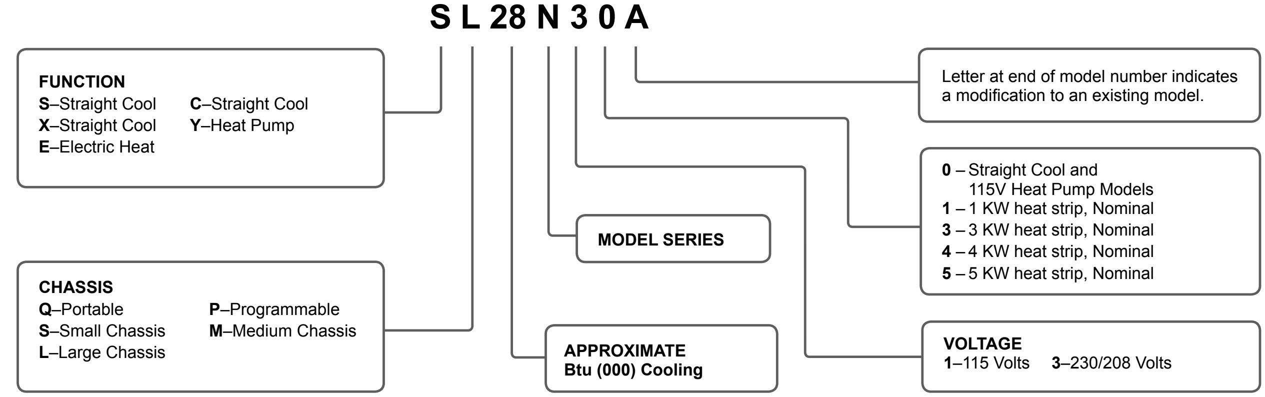
Circuit Rating/ Breaker

Model	Circuit Rating Breaker or T-D Fuse	Plug Face (NEMA#)	Power Cord Length (ft.)	Wall Outlet Appearance
CP05G10A	125V-15A	5 -15P	6 1/2	
CP06G10A, CP08G10A, CP10G10A, CP12G10A and CP15G10A. EP08G11A. All SQ MODELS. EQ08N11B. SS08N10B, SS10N10B, SS12N10B and SS14N10A. YS10N10B. SM15N10B.	125V - 15A	5- 5P	6	
CP18G30A	250V - 15A	6 - 15P	4 1/2	
SS12N30B and SS16N30, SM18N30 and SM21N30B. SL24N30B.			6	
CP24G30A. EP12G33A, EP18G33A and EP24G33A.	250V - 20A	6 - 20P	4	
SM24N30A. SL28N30B. ES12N33B and ES16N33. YS12N33B.	250V - 20A	6 - 20P	6	
SL36N30B. EM18N34, EM24N34A and EL36N35B. YM18N34B and YL24N35B.	250V - 30A	6 - 30P	6	

Sleeve Dimensions Drawing



Room Air Conditioner Model Identification Guide



FUNCTION
S–Straight Cool
X–Straight Cool
E–Electric Heat
C–Straight Cool
Y–Heat Pump

CHASSIS
Q–Portable
S–Small Chassis
L–Large Chassis
P–Programmable
M–Medium Chassis

MODEL SERIES

APPROXIMATE
Btu (000) Cooling

Letter at end of model number indicates a modification to an existing model.

0 – Straight Cool and 115V Heat Pump Models
1 – 1 KW heat strip, Nominal
3 – 3 KW heat strip, Nominal
4 – 4 KW heat strip, Nominal
5 – 5 KW heat strip, Nominal

VOLTAGE
1–115 Volts **3**–230/208 Volts

FRIEDRICH

EXHIBIT 21

AREAS TO BE DISTURBED BY CONSTRUCTION

midtown project

Summary of Disturbances

Lot # or area	Area of Disturbance		Comment
	acres	square feet	
1	0.46	19,992	Entire Lot
2	0.45	19,623	Entire Lot
3	0.59	25,760	Entire Lot
4	0.34	14,905	Portion only
5	0.42	18,201	Entire Lot
6	1.07	46,803	Entire Lot
7	0.50	21,917	Entire Lot
9	0.37	16,000	Portion only
Somerset Street	1.19	51,891	
Chestnut Street	0.50	21,872	
Pearl Street Extension	0.23	10,124	
Elm Street	0.14	6,108	
Total	**6.27**	**273,196**	

Note:

The disturbances to the trail exclude damage and disturbance beyond the grading limit that may occur as a result of construction access, operation of equipment and or construction access

EXHIBIT 22

SAMPLE OF EXTERIOR MATERIALS

Physical Samples will be Hand Delivered to Rick Knowland for Review

EXHIBIT 23

WRITTEN WAIVERS FROM SITE PLAN OR TECHNICAL STANDARDS

WRITTEN REQUESTS FOR WAIVERS FROM
SITE PLAN OR TECHNICAL STANDARDS

PART 1 –THE FOLLOWING WAIVER REQUEST FOR BUILDING AND B-7 STANDARDS HAS BEEN PREPARED BY CBT ARCHITECTS

1. Applicant requests waiver from Standard B-3 requirement to provide mid-block permeability through **midtownThree** block between Chestnut and Elm Streets, connecting Somerset Street to the Bayside Trail.

   MidtownThree provides retail space fronting on Somerset Street which is designed as "through space", that is, allowing a visual connection through to the Bayside Trail beyond. It is noted that the building opposite this building on Somerset Street has no mid-block connector and the trail adjacent to the building's north facade is defined by a berm containing stabilized contaminated soil which rises 6 feet above the floor level of the retail space. In addition, there is a fenced parking lot on the north side of the trail. A mid-block connector in this instance would serve no real purpose as there would be no matching connector on the other side of Somerset Street and no pedestrian connection to the trail or properties to the north – that is a connector by itself (even if it could overcome the topographic problem of the berm, would generate no foot traffic as it would not be part of a larger pattern of pedestrian movement.

   The building design does, however, hold back from the property line at its west end allowing an expanded trail connection to Somerset and Elm Streets with easy and inviting access from Somerset Street.

2. Applicant requests waiver from the Standard B-7 requirement to provide continuity of street level uses along Somerset, Chestnut, and Pearl Streets.

   A service entrance for the **midtownOne** apartment building and its ground floor retail use is provided on Pearl Street; service entrance for **midtownTwo** retail space is provided adjacent to the garage entrance; service entrance for **midtownThree** retail and residences is provided on Somerset Street, and the service entrance for **midtownFour** is provided on Elm Street.

   These service entrance doors will be from seven feet to eleven feet wide, will be designed as an integral part of the modern industrial aesthetic of the buildings, and will be opened only to remove trash and recycling to vehicles parked in designated service spaces.

   Service for the ground floor retail use in the Garage building will be provided through the front door(s) of the retail spaces from loading zones along Somerset Street.

   Loading dock facilities are planned only at buildings one and three; for retail spaces tenants will provide for trash and recycling facilities within their leased premises.

Retail and apartment lobbies will form more than 90% of street frontages thus assuring the maximum frontage along Somerset, Chestnut, and Pearl Streets. Elm Street is planned to have continuous retail frontage.

3. Applicant requests waiver from Standard B-11 requirement to comply with City's Technical and Design standards for street lighting along Elm, Somerset, Chestnut, and Pearl Streets.

   The Plan for **midtown** Development will utilize the standard type fixture for Somerset Street, Elm, Chestnut Street, and Pearl Extension. Location and spacing may need a waiver. As well, higher intensity lighting is appropriate for the retail locations especially along Somerset Street and to create a uniform appearance along the ground floor retail areas of the development which may require a waiver of some requirements.

   Pedestrian lighting will be provided by the streetscape lighting noted above together with 'spill' lighting from retail store fronts.

   Lighting for the mews and new public opens spaces will be designed to complement these standards.

4. Applicant requests waiver from Standard C-2 requirement to separate vehicular entrance and exit from parking garage.

   In the Plan for **midtown** Development, garages will be designed to respect the pedestrian realm and minimize the visual impact of the garage entrance and exit by collocating the garage entrance and exit. These consolidated entry/exits will provide greater uninterrupted active retail use on the ground floor and will require a waiver from the requirement for separate entry/exit.

   Entry/egress gates will be located interior to the garages to allow entrance queuing internal to the structure minimizing back up onto Somerset Street.

5. Applicant requests waiver from Standard C-5 requirement that garage decks shall be horizontal where visible from public ways.

   The garage decks of the Plan for midtown Development will be level on the Chestnut and Somerset Street and the Mews facades, and will incorporate a parking ramp between parking levels along the Bayside Trail façade. The Plan seeks a waiver to allow these ramps to be expressed to the Trail and visible tangentially from streets and public rights of way.

   The **midtownTwo** Parking Garage has been designed with ramps at the Bayside Trail façade supported on sloping structure between horizontal end bays. The end bays will be clad in architectural precast concrete with openings similar in size and spacing to the apartment building windows. The sloped structure between these will be minimized, cable rails will provide for pedestrian and auto safety, and the interior structure will be a dark color, all to minimize visibility of the sloping ramps. The façade will be screened above the retail ground floor with green or other appropriate screening materials.

6. Applicant requests a partial waiver from Standard D-2 requirement that buildings adjacent to the trail have active doors into the building on facades facing the trail.

   All the **midtown** buildings are designed with façade elements adjacent to the Bayside Trail that enhance the trail experience. As noted above, these facades are not designed as "backs", and they provide the important element of residential windows overlooking the trail. Food service establishments are the planned as part of the retail leasing program for the ground floors of the all buildings. This may provide some entrances and egresses facing the trail.

   The partial waiver is sought on the requirement of having "active building ingress and egress" on the portion of **midtownThree** facing the trail because of natural changes in grade. The trail adjacent to the building's north facade is defined by a berm containing stabilized contaminated soil which rises 6 feet above the floor level of the retail space. It would be impractical to create entrances form the berm, and a hardship to remove it.

7. Applicant requests a waiver from Standard E-12 requirement that building facades visible from the public rights of way shall consist of natural building materials

   The buildings in the **midtown** Development will be clad in precast concrete, EFIS, aluminum, vinyl, or other siding materials, corrugated metal siding, with vinyl residential windows and enameled aluminum and glass storefront window and louver systems. All materials will be chosen for durability and long service life. These materials are manufactured for durability and long life, and will be detailed to stand up to all the rigors that the New England coastal climate offers.

   A waiver is being sought of Standard E-12 for the use of EFIS and vinyl metal or cement composite siding panels. Building material technology has evolved in recent years with offerings of higher strengths, color and pattern choices, and the ability to vary forms within a façade composition. These materials can have a handsome, elegant appearance when assembled in architecturally considered designs. Additionally the performance of these materials is very well understood and their use rivals the age and performance of heavier exterior materials like masonry stone or concrete.

8. Applicant requests clarification that a wind study will not be required under Standard E-20, or if required a waiver from such study.

   As the buildings are all substantially lower than the limits of height prescribed for the project area, and are consistent with the height of other recent developments in the district that have not experienced uncomfortable winds, the Applicant seeks clarification that a detailed professional wind study will not be required for Final Level III Site Plan review

   Initial assessment of wind roses and anecdotal reports suggest that winter winds from the North and Northwest might cause probable discomfort for sitting activities in the Courtyard if midtownOne were built to 165 feet tall. The building is proposed at 72 feet however, and the effects of wind would be attenuated substantially. It is therefore highly probable that users seated in the courtyard would find these winter winds uncomfortable.

Summer winds from the South will be tempered by topography and existing construction south of the project site. The tendency for the south wind to concentrate in the Mews will be mitigated by the openness of the garage.

Other uncomfortable winds previously predicted for walking at the Elm Street end of the trail, predicated on a pair of 165 ft. high buildings, would be similarly attenuated in the Applicant's current proposal to build midtownThree and midtownFour as substantially lower 72 ft. high buildings. It is highly improbable that pedestrians on the trail, Elm Street, or Somerset Street in this vicinity would experience any discomfort due to wind while sitting, standing still, walking, or jogging.

9. Applicant requests a waiver from Section 14-296 a.ii. requirement that parking garage façade be set back a minimum of 35 ft. from the street right of way.

   Due to the shallow nature of the lot and the city's desire to create active retail street frontage on Somerset Street the façade of the building is set back ten ft. and continuous retail frontage is provided at ground level.

10. Applicant requests an exception from Section 14-334 (a) and (b) to allow parking serving midtownFour to be located in midtownTwo, and to allow ownership of the parking separate from ownership of the residential and retail buildings.

    The entrances to the garage and the midtownFour buildings are more than 100 ft. but less than 1500 ft. apart. The four buildings are being developed as a single project but the applicant wishes to reserve the right to finance or sell each building separately at any time in the future. As the garage will always be a resource to the neighborhood, residents of the other three buildings will always be able to park their vehicles in it.

PART 2 – WAIVER REQUEST FOR CIVIL DESIGN PREPARED BY FST ENGINEERS

11. 1.4 Street Grades (reference page 3 of Technical Standards)

- *The cross slope for local streets shall be 0.03. The cross slope for other street classifications shall be 0.02.*

The project will require the reconstruction of Somerset Street. The building will be set at elevation 12.0 to be 2 feet above the higher flood hazards anticipated to increase over time. There are existing buildings with finish floors, entrances, and exits at lower elevations. The Federated plan for the midtown project has extensive ground floor retail which requires flush accessible entrances. On the other hand, there are existing buildings across the street (most notably the "Noyes" property with existing floors and entrance elevations which will not be changed. Because the buildings on either side of the street are near or on the right of way, some variation from transverse slopes and location of the street crown from the City's typical cross section within the street right of way will be required.

12. **1.5 Vertical Alignment: Parabolas at grade changes (K values) (Reference Pages 3 & 4 of the Technical Standards)**

    The profiles for the reconstruction of Chestnut, Somerset, Elm, and Pearl Streets are included in the Plan Documents. Minor variations from the City Standards for the "K" values (30 and 40 for crests and sags) will be requested.

    It is anticipated, the variation of the K value for the sags on Chestnut Street is expected to have a "K" value of 33.56 and Elm Street is expected to have a value of 39.89.

13. **Section 2 – Sanitary Sewer and Storm Drain Design Standards**

    2.7.8. No storm drain lines, with the exception of field inlets and underdrains, shall be connected into a catch basin structure (Reference Page 82 of the Technical Standards)

    Representatives from the City of Portland have indicated the technical standards are being revised and will remove this restriction. If the standards have been revised, this waiver will not be required. The waiver is very important to avoid excessive piping and appurtenances in the public streets.

14. **Section 5**

    Portland Stormwater Management Standards and MaineDEP Chapter 500 Stormwater Management (Reference Page 149; Section E. 2 6 of this Chapter of the Technical Standards)

    The requirements include stormwater detention for flood control. The applicant is requesting a waiver to the requirement for detention as part of the Stormwater Management Plan. The location of the site within the watershed results in a condition where passing flow from this area as soon as possible allows capacity to free up to receive and convey flows from upstream areas.

15. **Section 7**

    Soil Survey Standards (Reference Page 209 of the Technical Standards)

    The applicant is requesting a waiver from the City of Portland's requirement to provide a high intensity soil survey. This request is made after considering that the site is on fill land, the site has been heavily disturbed as part of environmental cleanup measures over the past several years, the site will be nearly impervious after development such that hydrologic soils rating is not a significant issue.

PART 3 – WAIVER REQUEST FOR LANDSCAPING AND LANDSCAPE PRESERVATION PREPARED BY MITCHELL & ASSOCIATES

16. **4.6 Street Trees:**

    Waiver: The applicant is requesting a waiver of the requirement for providing one street tree per residential unit. The maximum number of units proposed for the "midtown" project is 445 units. A total of 97 trees, not including replaced street trees along Elm Street, are being provided along Chestnut Street, Somerset Street, Pearl Street, and along the Bayside Trail. The request is based upon the enhanced planting method that includes 4 FT x 8 FT raised (granite curb) planting beds and a structural planting system below grade that provides for *an expanded root zone that is approximately 60 % larger than typical street tree planting area. There are 29 raised planters located along the street frontages and the cost to install improvements for these trees well exceeds the fee in lieu for the additional 349 trees.*

B-7 MIXED USE URBAN DISTRICT DESIGN PRINCIPALS AND STANDARDS

PRINCIPAL D OPEN SPACE AND PUBLIC REALM

17. Standard D-3 Landscaping and Street Furniture:

Planters, wells and tree grates: *The applicant is requesting a waiver for raised planting beds associated with the ramp system located within the right of way that occur along the Somerset Street sidewalk adjacent to Pearl Street extension and Elm Street as designed.*

Irrigation and Drainage: *The applicant is requesting a waiver of the requirement for an irrigation system. All plant material selected shall conform the city standards, be selected for drought tolerance in addition, will be located in larger raised planting areas.*

MEMORANDUM #1

In an effort to address questions and/or concerns raised at the November 12, 2014 Planning Board meeting, and to provide some background information regarding specific details of the Level III Site Plan & Subdivision submission, we have prepared the following memorandum.

Regarding the required mid-block permeability between Chestnut Street and Elm Street, we are requesting a waiver due to issues related to the design, functionality, and efficiency of the structure. Furthermore, it is our belief that the access point would not in any way provide any functional benefit. When contemplating various ways to provide this pass through, we considered the following:

- A physical separation, creating two separate structures- We felt that this was the obvious first choice as it was aesthetically the most attractive option. After review, we came to the conclusion that, due to the unusually narrow lot width and a host of other site limitations, we were unable to design two buildings that made economic sense to construct. Both buildings would require their own building core, service area, and entry lobby. The physical separation would also result in the loss of 20 apartments and approximately six thousand feet of leasable retail space. Additionally, it would “break” the continuous retail activity along Somerset Street that we believe is essential to creating the experience necessary to drive people to an area that today is best described as an urban wasteland.

- An access corridor within the retail space of the currently proposed structure- We feel very strongly that this is not a viable option. Our concerns are economic (the loss of square footage would have an adverse financial impact) and functional (the resulting separation would further limit the flexible subdivision of the retail space), but our primary concern is security related. We believe that this enclosed space will become a haven from inclement weather and a place that people will go to escape the public eye. We have concerns related to loitering and illegal activity, and although we will have personnel on site we will not be equipped to monitor or police activity within this confined space. We believe that the possibility for this type of behavior, in and of itself, will deter usage of this access point by ordinary citizens.

In addition to the specific concerns raised above, the mid-block pass through is further complicated by the fact that when the trail was built, a berm was created along the length of this lot preventing a simple “pass through” and necessitating the deconstruction of this berm and the remediation of the site and disposal of the contaminated material that the berm is currently comprised of. Given that the City of Portland created this condition when the trail was constructed and that the condition lies on city property, we feel that the burden of remediating and re-grading this area would be unfairly placed on the developer in the event that this permeation were required.

Finally, we believe that the proposed pass through has no functional benefit due to existing conditions. The proposed pedestrian connection provides no north/south connectivity as the blocks between Cumberland Avenue and Congress Street, Lancaster Street and Kennebec Street, Kennebec Street and Somerset Street, and Somerset Street and Marginal Way lack any connectivity and the presence of multiple structures limits the likelihood that this condition will change anytime soon. It is this lack of connectivity that would make it highly unlikely that a pedestrian would arrive at the point of the proposed access to begin with. The connectivity to the trail, which we view as the sole benefit of this action, is not improved in any way as an individual accessing the trail can do so at the trailhead that merges with the sidewalk immediately west of the building or at the Chestnut Street crossing to the east. In an effort to improve this access and to improve visibility at the trailhead, the developer has voluntarily removed over three thousand feet of retail space, effectively shortening the length of the building and the distance between trail connections. We believe that the proposed pass through provides no benefit because, in the unlikely event that a pedestrian were to arrive at the point of the proposed access, and due to the fact that the sidewalk runs parallel to the trail, the distance traveled in either direction would be exactly the same.

Prepared by Jonathan Cox

MEMORANDUM #2

In an effort to address questions and/or concerns raised at the November 12, 2014 Planning Board meeting, and to provide some background information regarding the details of the Level III Site Plan & Subdivision submission, we have prepared the following memorandum.

Regarding the use of certain exterior finish materials not otherwise allowed, we are requesting a waiver due to the compatibility of these systems with the intended construction type and the various functional and economic benefits of utilizing these materials in the construction of the building façade. In determining that these materials were the most appropriate application, we considered the following:

- PLEASE NOTE THAT WE ARE NOT REQUESTING A WAIVER FOR THE USE OF VINYL SIDING. WE HAVE NO INTENTION OF UTILIZING THIS MATERIAL IN THE CONSRUCTION OF THIS PROJECT. A WAIVER IS BEING REQUESTED FOR THE USE OF EIFS, A FROM OF SYNTHETIC STUCCO AND A MATERIAL WHOSE APPEARANCE IS VIRTUALLY INDISTINGUISHABLE FROM MATERIALS CURRENTLY APPROVED FOR USE IN THIS ZONE.

- While reviewing the possibility of reducing the height of the proposed structures, we came to the conclusion that the project became economically constrained when maintaining the previously proposed steel frame construction type. We analyzed the benefits and drawbacks of wood frame construction, in this case over a concrete podium, and decided that this framing material was better suited to construct the reduced height buildings. Timber frame construction results in a more environmentally sustainable building structure, has a smaller carbon footprint, and is far more energy efficient to construct and to operate.

  The wood frame structure interacts better with a lighter weight façade material. EIFS, or synthetic stucco, the surface material for which we are requesting a waiver to utilize, is a lighter weight application than a comparable fiber-cement panel. THE INSTALLED LOOK OF BOTH PRODUCTS IS VIRTUALLY IDENTICAL. EIFS is a superior product and has emerged as the preferred option, and is far more widely used than it’s fiber-cement alternative. EIFS is an applied siding, whereas the fiber-cement panel is an installed siding. The fiber-cement panel is installed using mechanical fasteners, which are unsightly, maintenance intensive, and are subject to failure. The fiber-cement siding is panelized, creating gaps in the building envelope that contribute to energy loss. EAFS is troweled on, eliminating the use of mechanical fasteners, and creating a sealed application that actually increases the insulation value of the structure. EIFS acts as a “blanket”, wrapping the exterior of the structure, reducing air infiltration and energy consumption. It eliminates “thermal breaks” associated with installed siding.

  Virtually indistinguishable from the fiber-cement panel, both are designed to resemble stucco. EIFS, however, expands the architect’s design palate as it is available in a virtually limitless amount of colors and textures, whereas fiber-cement siding is fairly limited. It also allows for the construction of architectural detailing that would be cost prohibitive using conventional construction methods, such as cornices, arches, columns, and keystones. These details are computer-generated and laser cut out of insulation board, and the finish material is directly applied to the base insulation.

The lower operating costs and limited maintenance of this product allow for efficient operation of the structure on an ongoing basis. Additionally, it is our opinion that the expanded range of options that this material provides allows us to deliver a superior product at an economical price. In tandem with the other specified façade materials, we believe that we have presented a project that is reflective of the modern-industrial design aesthetic, paying homage to the neighborhoods industrial past while looking forward to its modern future.

Prepared by Jonathan Cox

FEDERATEDEQUITIES 3301 NE 1st Ave, Suite M302, Miami, FL 33137

EXHIBIT 24

LEED INFORMATION

The buildings at midtown if designed and constructed to comply and registered with USGBC are capable of achieving LEED certification.

The attached checklists show the prerequisites and credits that can be accomplished within the proposed designs.

LEED does not have a separate program for structured parking garages, so this building is treated as a core and shell project to provide space for the ground floor retail tenant and the parking is assumed to serve all four buildings. The retail space at the base of the three residential buildings is assumed to be an incidental core and shell use within the residential mixed-use buildings.

The checklists show that each building is capable of achieving LEED certification.

Prepared by CBT Architects

November 14, 2014

LEED v4 for BD+C: New Construction and Major Renovation

Project Checklist

Project Name: midtownOne, Somerset St., Portland Maine

Date: 14-Nov-14

Y	?	N			
1			Credit	Integrative Process	1

13	11	9	Location and Transportation		16
	10	6	Credit	LEED for Neighborhood Development Location	16
2			Credit	Sensitive Land Protection	1
2			Credit	High Priority Site	2
5			Credit	Surrounding Density and Diverse Uses	5
1	1	3	Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

5	3	2	Sustainable Sites		10
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
	2		Credit	Site Development - Protect or Restore Habitat	2
1			Credit	Open Space	1
2	1		Credit	Rainwater Management	3
		2	Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1

2	2	7	Water Efficiency		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
	1	1	Credit	Outdoor Water Use Reduction	2
1	1	4	Credit	Indoor Water Use Reduction	6
		2	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

8	11	15	Energy and Atmosphere		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
	6		Credit	Enhanced Commissioning	6
8	2	8	Credit	Optimize Energy Performance	18
		1	Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
	1	2	Credit	Renewable Energy Production	3
	1	1	Credit	Enhanced Refrigerant Management	1
	1	1	Credit	Green Power and Carbon Offsets	2

5	3	5	Materials and Resources		13
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
		5	Credit	Building Life-Cycle Impact Reduction	5
1	1		Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
1	1		Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1	1		Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

10	3	3	Indoor Environmental Quality		16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
2			Credit	Enhanced Indoor Air Quality Strategies	2
3			Credit	Low-Emitting Materials	3
	1		Credit	Construction Indoor Air Quality Management Plan	1
	1	1	Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
1	1		Credit	Interior Lighting	2
1		2	Credit	Daylight	3
1			Credit	Quality Views	1
1			Credit	Acoustic Performance	1

1	0	0	Innovation		6
			Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

0	0	0	Regional Priority		4
			Credit	Regional Priority: Specific Credit	1
			Credit	Regional Priority: Specific Credit	1
			Credit	Regional Priority: Specific Credit	1
			Credit	Regional Priority: Specific Credit	1

45	33	41	TOTALS	Possible Points:	110

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

LEED 2009 for Core and Shell Development

Project Checklist

midtownTwo retail

14 Nov 2014

24		4	Sustainable Sites		Possible Points: 28
Y	?	N			
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
1			Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
2			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	2
3			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
		1	Credit 5.1	Site Development—Protect or Restore Habitat	1
		1	Credit 5.2	Site Development—Maximize Open Space	1
1			Credit 6.1	Stormwater Design—Quantity Control	1
1			Credit 6.2	Stormwater Design—Quality Control	1
		1	Credit 7.1	Heat Island Effect—Non-roof	1
		1	Credit 7.2	Heat Island Effect—Roof	1
1			Credit 8	Light Pollution Reduction	1
1			Credit 9	Tenant Design and Construction Guidelines	1

2	2	6	Water Efficiency		Possible Points: 10
Y			Prereq 1	Water Use Reduction—20% Reduction	
2		2	Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
	2	2	Credit 3	Water Use Reduction	2 to 4

9	11	17	Energy and Atmosphere		Possible Points: 37
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
5	5	11	Credit 1	Optimize Energy Performance	3 to 21
		4	Credit 2	On-Site Renewable Energy	4
	2		Credit 3	Enhanced Commissioning	2
		2	Credit 4	Enhanced Refrigerant Management	2
1	2		Credit 5.1	Measurement and Verification—Base Building	3
3			Credit 5.2	Measurement and Verification—Tenant Submetering	3
	2		Credit 6	Green Power	2

4	3	6	Materials and Resources		Possible Points: 13
Y	?	N			
Y			Prereq 1	Storage and Collection of Recyclables	
		5	Credit 1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 5
2			Credit 2	Construction Waste Management	1 to 2
		1	Credit 3	Materials Reuse	1
1	1		Credit 4	Recycled Content	1 to 2
1	1		Credit 5	Regional Materials	1 to 2
	1		Credit 6	Certified Wood	1

6	4	2	Indoor Environmental Quality		Possible Points: 12
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
	1		Credit 1	Outdoor Air Delivery Monitoring	1
	1		Credit 2	Increased Ventilation	1
	1		Credit 3	Construction IAQ Management Plan—During Construction	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
		1	Credit 6	Controllability of Systems—Thermal Comfort	1
		1	Credit 7	Thermal Comfort—Design	1
	1		Credit 8.1	Daylight and Views—Daylight	1
1			Credit 8.2	Daylight and Views—Views	1

			Innovation and Design Process		Possible Points: 6
			Credit 1.1	Innovation in Design: Specific Title	1
			Credit 1.2	Innovation in Design: Specific Title	1
			Credit 1.3	Innovation in Design: Specific Title	1
			Credit 1.4	Innovation in Design: Specific Title	1
			Credit 1.5	Innovation in Design: Specific Title	1
			Credit 2	LEED Accredited Professional	1

			Regional Priority Credits		Possible Points: 4
			Credit 1.1	Regional Priority: Specific Credit	1
			Credit 1.2	Regional Priority: Specific Credit	1
			Credit 1.3	Regional Priority: Specific Credit	1
			Credit 1.4	Regional Priority: Specific Credit	1

45	20	35	Total	Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

LEED v4 for BD+C: New Construction and Major Renovation

Project Checklist

Project Name: midtownThree, Somerset St., Portland Maine

Date: 14-Nov-14

Y	?	N			
1			Credit	Integrative Process	1

13	11	9	Location and Transportation		16
	10	6	Credit	LEED for Neighborhood Development Location	16
2			Credit	Sensitive Land Protection	1
2			Credit	High Priority Site	2
5			Credit	Surrounding Density and Diverse Uses	5
1	1	3	Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

5	3	2	Sustainable Sites		10
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
	2		Credit	Site Development - Protect or Restore Habitat	2
1			Credit	Open Space	1
2	1		Credit	Rainwater Management	3
		2	Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1

2	2	7	Water Efficiency		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
	1	1	Credit	Outdoor Water Use Reduction	2
1	1	4	Credit	Indoor Water Use Reduction	6
		2	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

8	11	15	Energy and Atmosphere		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
	6		Credit	Enhanced Commissioning	6
8	2	8	Credit	Optimize Energy Performance	18
		1	Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
	1	2	Credit	Renewable Energy Production	3
	1	1	Credit	Enhanced Refrigerant Management	1
	1	1	Credit	Green Power and Carbon Offsets	2

5	3	5	Materials and Resources		13
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
		5	Credit	Building Life-Cycle Impact Reduction	5
1	1		Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
1	1		Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1	1		Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

10	3	3	Indoor Environmental Quality		16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
2			Credit	Enhanced Indoor Air Quality Strategies	2
3			Credit	Low-Emitting Materials	3
	1		Credit	Construction Indoor Air Quality Management Plan	1
	1	1	Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
1	1		Credit	Interior Lighting	2
1		2	Credit	Daylight	3
1			Credit	Quality Views	1
1			Credit	Acoustic Performance	1

1	0	0	Innovation		6
			Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

0	0	0	Regional Priority		4
			Credit	Regional Priority: Specific Credit	1
			Credit	Regional Priority: Specific Credit	1
			Credit	Regional Priority: Specific Credit	1
			Credit	Regional Priority: Specific Credit	1

45	33	41	TOTALS	Possible Points:	110

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

LEED v4 for BD+C: New Construction and Major Renovation

Project Checklist

Project Name: midtownFour, Somerset St., Portland Maine
Date: 14-Nov-14

Y	?	N			
1			Credit	Integrative Process	1

13	11	9	**Location and Transportation**		16
	10	6	Credit	LEED for Neighborhood Development Location	16
2			Credit	Sensitive Land Protection	1
2			Credit	High Priority Site	2
5			Credit	Surrounding Density and Diverse Uses	5
1	1	3	Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

5	3	2	**Sustainable Sites**		10
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
	2		Credit	Site Development - Protect or Restore Habitat	2
1			Credit	Open Space	1
2	1		Credit	Rainwater Management	3
		2	Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1

2	2	7	**Water Efficiency**		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
	1	1	Credit	Outdoor Water Use Reduction	2
1	1	4	Credit	Indoor Water Use Reduction	6
		2	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

8	11	15	**Energy and Atmosphere**		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
	6		Credit	Enhanced Commissioning	6
8	2	8	Credit	Optimize Energy Performance	18
		1	Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
	1	2	Credit	Renewable Energy Production	3
	1	1	Credit	Enhanced Refrigerant Management	1
	1	1	Credit	Green Power and Carbon Offsets	2

5	3	5	**Materials and Resources**		13
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
		5	Credit	Building Life-Cycle Impact Reduction	5
1	1		Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
1	1		Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1	1		Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

10	3	3	**Indoor Environmental Quality**		16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
2			Credit	Enhanced Indoor Air Quality Strategies	2
3			Credit	Low-Emitting Materials	3
	1		Credit	Construction Indoor Air Quality Management Plan	1
	1	1	Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
1	1		Credit	Interior Lighting	2
1		2	Credit	Daylight	3
1			Credit	Quality Views	1
1			Credit	Acoustic Performance	1

1	0	0	**Innovation**		6
			Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

0	0	0	**Regional Priority**		4
			Credit	Regional Priority: Specific Credit	1
			Credit	Regional Priority: Specific Credit	1
			Credit	Regional Priority: Specific Credit	1
			Credit	Regional Priority: Specific Credit	1

45	33	41	**TOTALS**	Possible Points:	110

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110